

The background of the entire page is a photograph of a university building. In the upper half, a large, ribbed dome is visible, partially obscured by out-of-focus pink cherry blossoms in the foreground. In the lower half, a stone archway with the words "GEORGE WASHINGTON" carved into it is visible, supported by columns. The overall tone is warm and academic.

THE GEORGE WASHINGTON UNIVERSITY UNDERGRADUATE PROGRAMS BULLETIN

2006-2007

Information in this bulletin is generally accurate as of fall 2005. The University reserves the right to change courses, programs, fees, and the academic calendar, or to make other changes deemed necessary or desirable, giving advance notice of change when possible.

Program information needed to fulfill a major appears under the name of the department or program concerned in Columbian College of Arts and Sciences and the Elliott School of International Affairs. For the School of Business, the School of Engineering and Applied Science, and the School of Public Health and Health Services, program information appears under the school's entry.

Depending on the degree program, students must fulfill program requirements stated in the bulletin in effect at the time they matriculate or declare their major. Any subsequent changes in programs that may appear in future bulletins do not affect the program a student has already entered.

The entries under Courses of Instruction represent departments and programs, rather than all categories of courses taught. For example, to find Chinese, Japanese, Korean, or Vietnamese courses, look under East Asian Languages and Literatures. There are many cross-references to help the reader.

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THE ACADEMIC CALENDAR 2006–2007

2006	Fall Semester
<i>September 5</i>	Classes begin
<i>September 5–15</i>	Late registration
<i>October 1</i>	Applications due for winter graduation

<i>November 8</i>	Registration for spring semester classes begins*
<i>November 23–25</i>	Thanksgiving holiday
<i>December 9</i>	Makeup classes
<i>December 11</i>	Last day of regular fall semester classes
<i>December 12–13</i>	Reading period
<i>December 14–22</i>	Examination period
2007	Spring Semester
<i>January 16</i>	Classes begin
<i>January 16–26</i>	Late registration
<i>February 1</i>	Applications due for May graduation
<i>February 19</i>	George Washington's birthday observed (holiday)
<i>March 12–17</i>	Spring recess
<i>March 21</i>	Registration for fall semester classes begins*
<i>May 1</i>	Makeup classes
<i>May 2</i>	Designated Monday
	Last day of regular spring semester classes
<i>May 3–4</i>	Reading period
<i>May 7–15</i>	Examination period
<i>May 20</i>	Commencement

The University

PRESIDENTS OF THE UNIVERSITY

1821–1827

William Staughton

* Registration dates are tentative; consult the *Schedule of Classes*.

1828–1841	Stephen Chapin
1843–1854	Joel Smith Bacon
1855–1858	Joseph Getchell Binney
1859–1871	George Whitefield Samson
1871–1894	James Clarke Welling
1894–1895	Samuel Harrison Greene, <i>Acting</i>
1895–1900	Benaiah L. Whitman
1900–1902	Samuel Harrison Greene, <i>Acting</i>
1902–1910	Charles Willis Needham
1910–1918	Charles Herbert Stockton
1918–1921	William Miller Collier
1921–1923	Howard L. Hodgkins, <i>ad interim</i>
1923–1927	William Mather Lewis
1927–1959	Cloyd Heck Marvin
1959–1961	Oswald Symister Colclough, <i>Acting</i>
1961–1964	Thomas Henry Carroll
1964–1965	Oswald Symister Colclough, <i>Acting</i>
1965–1988	Lloyd Hartman Elliott
1988–	Stephen Joel Trachtenberg

ABOUT THE UNIVERSITY

George Washington was determined to have a great national university in the nation's capital.

His hope was that students from all parts of the country would gain a first hand knowledge of the practice as well as the theory of republican government while being instructed in the arts and

sciences. He bequeathed 50 shares of The Potomac Company “towards the endowment of a University to be established within the limits of the District of Columbia, under the auspices of the General Government, if that government should incline to extend a fostering hand towards it.” Despite Washington’s intentions, The Potomac Company folded and Congress never extended a “fostering hand,” so the University did not take shape until a group of Baptist clergymen led by Reverend Luther Rice took up the cause. They raised funds for the purchase of a site and petitioned Congress for a charter. Congress insisted on giving the institution a non-sectarian charter which stated “That persons of every religious denomination shall be capable of being elected Trustees; nor shall any person, either as President, Professor, Tutor or pupil be refused admittance into said College, or denied any of the privileges, immunities, or advantages thereof, for or on account of his sentiments in matters of religion.”

Columbian College, as it was originally named, took up residence on College Hill, a 46-acre tract between the present 14th and 15th Streets extending from Florida Avenue to Columbia Road. The name of the institution was changed in 1873 to Columbian University and in 1904 to The George Washington University.

By 1918, the University had moved to the Foggy Bottom neighborhood—between 19th and 24th Streets, south of Pennsylvania Avenue—in the heart of Washington, D.C. The more than 90 buildings, including 14 residence halls, are situated on 43 acres bordered by the White House, the John F. Kennedy Center for the Performing Arts, the State Department, and the World Bank, as well as numerous federal agencies, national galleries and museums.

GW’s Virginia Campus, initiated for graduate studies, research projects, and professional development programs, is located along the high-tech corridor on Route 7, just to the west of Route 28, in Loudoun County. In 1998, GW established The George Washington University at

Mount Vernon College; the Mount Vernon Campus is on Foxhall Road in Northwest Washington.

Currently, the University's enrollments total more than 24,000, of which 10,400 are undergraduates, over 12,000 are graduate and professional students, and more than 1,000 are nondegree students. The students come from all 50 states and about 125 different countries.

Mission Statement

The George Washington University, an independent academic institution chartered by the Congress of the United States in 1821, dedicates itself to furthering human well-being. The University values a dynamic, student-focused community stimulated by cultural and intellectual diversity and built upon a foundation of integrity, creativity, and openness to the exploration of new ideas.

The George Washington University, centered in the national and international crossroads of Washington, D.C., commits itself to excellence in the creation, dissemination, and application of knowledge.

To promote the process of lifelong learning from both global and integrative perspectives, the University provides a stimulating intellectual environment for its diverse students and faculty. By fostering excellence in teaching, the University offers outstanding learning experiences for full-time and part-time students in undergraduate, graduate, and professional programs in Washington, D.C., the nation, and abroad. As a center for intellectual inquiry and research, the University emphasizes the linkage between basic and applied scholarship, insisting that the practical be grounded in knowledge and theory. The University acts as a catalyst for creativity in the arts, the sciences, and the professions by encouraging interaction among its students, faculty, staff, alumni, and the communities it serves.

The George Washington University draws upon the rich array of resources from the National Capital Area to enhance its educational endeavors. In return, the University, through its students, faculty, staff, and alumni, contributes talent and knowledge to improve the quality of life in metropolitan Washington, D.C.

The Schools

The George Washington University includes nine academic units, as follows:

Columbian College of Arts and Sciences offers programs leading to the degrees of Bachelor of Arts, Bachelor of Science, Bachelor of Fine Arts, Master of Arts, Master of Fine Arts, Master of Forensic Sciences, Master of Public Administration, Master of Public Policy, Master of Science, Master of Philosophy, Doctor of Philosophy, and Doctor of Psychology.

The School of Medicine and Health Sciences offers programs leading to the degrees of Bachelor of Science in Health Sciences, Master of Science in Health Sciences, Master of Science in Nursing, Doctor of Physical Therapy, and Doctor of Medicine.

The Law School offers programs leading to the degrees of Juris Doctor, Master of Laws, and Doctor of Juridical Science.

The School of Engineering and Applied Science offers undergraduate programs leading to the degrees of Bachelor of Science and Bachelor of Arts. Graduate programs lead to the degrees of Master of Science, Master of Engineering Management, Engineer, Applied Scientist, and Doctor of Science.

The Graduate School of Education and Human Development offers programs leading to the degrees of Master of Arts in Education and Human Development, Master of Arts in Teaching, Master of Education, Education Specialist, and Doctor of Education.

The School of Business offers programs leading to the degrees of Bachelor of Accountancy, Bachelor of Business Administration, Master of Accountancy, Master of Business Administration, Master of Science in Finance, Master of Science in Information Systems Technology, Master of Science in Project Management, Master of Tourism Administration, and Doctor of Philosophy.

The Elliott School of International Affairs offers programs leading to the degrees of Bachelor of Arts, Master of Arts, Master of International Policy and Practice, and Master of International Studies.

The School of Public Health and Health Services offers programs leading to the degrees of Bachelor of Science, Master of Science, Master of Public Health, Master of Health Services Administration, Specialist in Health Services Administration, and Doctor of Public Health.

The College of Professional Studies offers programs leading to the degrees of Associate in Professional Studies, Bachelor of Professional Studies, and Master of Professional Studies.

Accreditation

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Schools.

The University is on the approved list of the American Association of University Women and is a member of the College Board.

The Law School is a charter member of the Association of American Law Schools and is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association.

The School of Medicine and Health Sciences has had continuous approval by its accrediting body, which is currently the Liaison Committee on Medical Education, sponsored jointly by the

American Medical Association and the Association of American Medical Colleges. The clinical laboratory science program is accredited by the National Accrediting Agency for Clinical Laboratory Science. The Commission on Accreditation of Allied Health Education Programs has accredited the programs in sonography and physician assistant in the School of Medicine and Health Sciences and the athletic training program in the School of Public Health and Health Services. The public health programs have full accreditation from the Council on Education for Public Health. The program in health services administration is accredited by the Accrediting Commission on Education for Health Services Administration.

All Bachelor of Science engineering curricula of the School of Engineering and Applied Science (excluding systems engineering) are accredited by the Engineering Accreditation Commission of ABET, Inc. The Bachelor of Science computer science curriculum is accredited by the Computing Accreditation Commission of ABET, Inc.

The Graduate School of Education and Human Development is a charter member of the American Association of Colleges for Teacher Education and is accredited by the National Council for Accreditation of Teacher Education and the State Education Agency–Board of Education of the District of Columbia for its eligible master’s, specialist, and doctoral degree programs; the master’s programs in school and community counseling and the doctoral program in counseling are accredited by the Council for the Accreditation of Counseling and Related Educational Programs; the master’s program in rehabilitation counseling is accredited by the Council on Rehabilitation Education.

The School of Business is a member of AACSB International–The Association to Advance Collegiate Schools of Business; the Association accredits its undergraduate and graduate business administration and accountancy programs. The programs in accountancy satisfy the

educational requirements for the Certified Public Accountant and the Certified Management Accountant professional examinations.

The Elliott School of International Affairs is a member of the Association of Professional Schools of International Affairs.

In Columbian College of Arts and Sciences, the B.F.A. with a major in interior design is accredited by the Foundation for Interior Design Education Research. The Department of Chemistry is on the approved list of the American Chemical Society. The Department of Music is an accredited member of the National Association of Schools of Music. The Ph.D. program in clinical psychology in the Department of Psychology and the Psy.D. program in the Center for Professional Psychology are on the approved list of the American Psychological Association. The M.A. program in speech–language pathology is accredited by the Education and Training Board of the Boards of Examiners in Speech–Language Pathology and Audiology. The M.P.A. program is on the approved list of the National Association of Schools of Public Affairs and Administration.

The Board of Trustees of the University

The University is privately endowed and is governed by a Board of Trustees of which the President of the University is an *ex officio* member. Trustees who are GW alumni are indicated by an asterisk. Locations are indicated for trustees outside the Washington metropolitan area.

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Joseph Harrington

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College of Professional Studies—*Dean* Roger Whitaker; *Associate Deans* F. Christopher

Arterton, Ali Eskandarian, Mary Virginia Smith

The Faculty Senate

In addition to the elected members listed below, the President of the University is *ex officio*; the Executive Vice President for Academic Affairs, the University Registrar, and the deans of the schools are administrative members; and a parliamentarian is selected by the Faculty Senate. In general, only primary appointments are listed below.

Lilien Filipovitch Robinson, *Professor of Art and Chair of the Executive Committee*

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Brian L. Biles, *Professor of Health Policy*

William John Briscoe, *Professor of Physics*

Michael Scott Castleberry, *Professor of Special Education*

Joseph John Cordes, *Professor of Economics and International Affairs*

Morgan Dennis Delaney, *Associate Professor of Medicine*

Ernest J. Englander, *Associate Professor of Strategic Management and Public Policy*

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Philip William Wirtz, *Professor of Management Science and Psychology*

Maria Cecilia Zea, *Professor of Psychology*

ADMISSIONS

The University reviews applications for admission each semester and summer session.

Admission is based on evidence of potential for successful study and on available space in the entering class. The following criteria are considered: the strength of the courses taken and the grades achieved in secondary school and/or college, standardized test scores, relationship between grades and test scores, essays, recommendations, and extracurricular activities.

Applicants may download a printable version of the application for admission from www.gwu.edu or may apply directly by using the online application. The nonrefundable fee is \$60 for the online application or \$70 for an application submitted on paper.

Secondary School Students

Freshmen—Regular Decision

Preference for places in the entering class will be given to students who submit the application with required credentials by January 10. Students who wish to begin college in the spring semester should submit the application by November 1.

Applicants from secondary schools must arrange to have sent directly from their schools to the Office of Admissions a complete academic record together with a teacher recommendation and a counselor recommendation. This information should be supplied on the appropriate forms in the application packet. Before enrolling, incoming freshmen must provide a complete high school record showing final grades and graduation.

Entrance Examinations—Applicants from secondary schools must submit scores on the College Board Scholastic Assessment Test (SAT I) or on the American College Testing (ACT) battery. Submission of scores on College Board SAT subject tests is recommended. Score reports must be sent directly to the Office of Admissions from the testing agency.

Freshmen—Early Decision I

High school seniors applying for fall admission as full-time freshmen with The George Washington University as their first choice may wish to take advantage of the Early Decision I option. To apply for Early Decision I, submit the application with supporting credentials by November 10; we will mail our decision in mid-December. If accepted, you are required to send in your declaration of intent to attend GW, together with appropriate nonrefundable deposits, no later than January 15 and to withdraw all applications for admission to other colleges and universities.

Freshmen—Early Decision II

If you decide after our Early Decision I deadline that GW is your first choice, our Early Decision II option may be best for you. To apply for Early Decision II, submit the application with

supporting credentials by January 10. We will mail our decision in early February. If accepted, you are required to send in your declaration of intent to attend GW, together with appropriate nonrefundable deposits, no later than March 1 and to withdraw all applications for admission to other colleges and universities.

Freshmen—Early Admission for High School Juniors

Exceptionally well-prepared students who will complete the junior year in high school may apply for early admission. This option is designed for students with the emotional maturity, as well as the academic ability and background, necessary for college entrance. In most cases, applicants accepted for early admission have exhausted academic offerings in secondary school to the extent that remaining for the senior year may not be in the best interests of the students.

To be considered for early admission, students must

1. demonstrate superior academic performance through the junior year of high school;
2. meet the entrance requirements of the GW school applied to, by completing all required entrance units with the possible exception of the fourth year of English;
3. have the unqualified recommendation of the secondary school principal or counselor;
4. submit two letters of recommendation (in addition to the counselor's) from teachers who can testify to the student's maturity and general readiness to enter college;
5. submit a letter from a parent or guardian supporting early college entrance;
6. take SAT I or ACT plus SAT subject tests in mathematics and two other SAT subject tests (of the student's choice) and arrange to have the scores sent directly to the Office of Admissions by the testing agency;
7. arrange for an interview with an admissions officer.

Students from Foreign Institutions

Applications, required records, and scores on the Test of English as a Foreign Language (see below) and SAT I should be received from international students no later than January 10 for regular decision for the fall semester and November 1 for the spring semester.

Required Records—At the time the application is sent, students must have the educational institutions previously attended send directly to the GW Office of Admissions copies of official certificates and records listing subjects studied, grades received, examinations taken, and degrees received. Certified copies of diplomas and certificates from all secondary schools, colleges, and universities attended are required. Records of state examinations and certificates are also required. These records become the property of the University and cannot be returned. These documents should be in the language in which the institution keeps its official records. If they are in a language other than English, the copies sent should be accompanied by a certified English translation.

Language Tests—All applicants whose first language is not English are required to take the Test of English as a Foreign Language (TOEFL). In considering candidates for admission, the University looks for a TOEFL score of 550 or above (paper-based), 213 or above (computer-based), or 80 or above (Internet-based). The School of Business requires a minimum score of 600 (paper-based), 250 (computer-based), or 100 or above (Internet-based) on a second taking of the TOEFL. Applicants are responsible for making arrangements to take the test at www.TOEFL.org. The completed registration form must be returned well in advance of the semester for which admission is sought. TOEFL scores may not be more than two years old. On the application for the TOEFL, students should specify that the scores be sent to the GW Office of Admissions.

Admitted students whose first language is not English are also required to take an English as a Foreign Language placement test prior to registering at the University; the placement test is waived for students with a TOEFL score of at least 600 (paper-based), 250 (computer-based), or 100 (Internet-based). Depending on the results of this test, the student's academic program may be restricted in number and type of courses that can be taken.

Financial Certificate—A Financial Certificate and Bank Letter must be completed and submitted with the application for admission of all international students planning to study at the University under the authorization of either a student (F) or exchange visitor (J) visa. Satisfactory completion and submission of the Financial Certificate and Bank Letter are required for the issuance of a Form I-20 or DS-2019.

Readmission

Previously registered students who wish to resume studies on campus after discontinuing enrollment for one or more semesters (summer sessions excluded) must apply for readmission. Deadlines for readmission applications from students in good academic standing are the same as those for transfer students. Students seeking readmission after having attended other institutions of higher education in the interim must have complete official transcripts sent to the Office of Admissions from all other institutions attended. Students seeking readmission as degree candidates after previous enrollment in nondegree status must submit a standard undergraduate degree application and fee, together with all entrance credentials not previously received or required.

Applicants for readmission are subject to the University regulations in effect at the time of readmission.

The application fee is waived for students applying for readmission after previous enrollment as degree candidates at this University if they have not since registered at another institution.

Transfer Students

To be considered for fall admission, undergraduate students from other institutions should submit the application with required credentials by May 1. Corresponding dates are November 1 for spring and April 1 for summer.

A transfer applicant should be in good standing as to scholarship and conduct at all postsecondary institutions previously attended. An applicant who has attended one or more institutions of higher education must request each registrar to mail directly to the Office of Admissions a transcript of his or her record, even if credits were not earned or if advanced standing is not desired. In addition, an applicant must have his or her high school record and College Board or ACT test scores sent to the Office of Admissions directly from the high school and testing agency.

Policies on Assignment of Credit for Transfer Students

Where there is no duplication involved, either through course work or examination, credit may be granted for work successfully completed at other institutions of higher learning. Assignment of transfer credit will depend on the grade earned, the appropriateness of the courses completed elsewhere, the standing of the institution at which the previous work was completed, and the regulations of the school of this University in which the credit is to be applied toward a degree.

Transfer credit must satisfy the requirements for the degree sought as stated in this Bulletin.

Credit may be accepted provisionally or may require validation by examination or completion of higher-level courses in the same sequence. Transfer credit will not be assigned for course work completed in vocational/technical programs (e.g., secretarial studies) or sub-freshman-level

remedial work. Each school reserves the right to refuse credit for transfer in whole or in part or to accept credit provisionally. Although a grade of *D* in a course is not acceptable for transfer, the course may satisfy a curriculum requirement; credits earned with a grade of *D* will not, however, be assigned as advanced standing. Students who wish to transfer from one degree-granting school of the University to another must be in good academic standing and submit a formal application to transfer to the Office of Admissions. A maximum of 45 credit hours earned as a nondegree student in the Office of University Students may be applied toward degree requirements in a degree-granting school of the University. All transfer students must satisfy the residence and course requirements for degrees sought at this University. Additional school-specific regulations on transfer credit follow; any questions should be addressed to the school concerned.

Columbian College of Arts and Sciences—A maximum of 18 credit hours of professional courses completed at another institution will be assigned toward a degree in Columbian College. No more than 66 hours of credit earned at a two-year college may be applied as advanced standing toward a degree. Students wishing to transfer from another division of the University into a degree program in Columbian College must have a cumulative grade-point average above 2.0 at the time of their last completed semester before transfer.

School of Business—No more than 60 credit hours of advanced standing are granted for course work completed at a two-year college. Certain business courses taken at a two-year college (one per area up to a maximum of three courses) comparable to this School's courses numbered 101–200 may be accepted for credit only after BAdm 197 is successfully completed with a grade of *C* or better in the senior year.

A course completed with a grade of *D* or better may not be repeated for the purpose of earning degree credit. Exceptions to this rule are English composition, Math 31 or 51, and all accountancy courses. Any student earning a *D* in such courses at another institution may be required to repeat the courses at this University.

An international student who is required to take the English as a Foreign Language placement test and fails to pass it will be required to complete successfully specified composition and/or writing course work, and the assignment of credit for any previously completed courses at another institution will be held pending completion of this requirement.

Students wishing to transfer from another division of the University must have a cumulative grade-point average of 2.8 or above at the time of transfer.

School of Engineering and Applied Science—Students should complete a Transfer of Credit worksheet, available in the SEAS Office of Admissions and Student Records, and present the worksheet to the faculty advisor for approval. A limited amount of credit may be assigned for selected service school courses.

Elliott School of International Affairs—No more than 66 credit hours earned at a two-year college may be applied as advanced standing toward a degree. Students wishing to transfer from another division of the University into a degree program in the Elliott School must have a cumulative grade-point average of 2.5 or above at the time of transfer.

School of Public Health and Health Services—Students apply directly to this school to enter upon completion of 30 credit hours with a minimum grade-point average of 2.5 for the athletic training major and upon completion of 60 credit hours with a minimum grade-point average of 3.0 for the public health major. Students applying to the exercise science major may enter this program either as freshmen or as transfer students with a minimum grade-point average of 2.0.

Enrollment Deposit

After notification of acceptance, an enrollment deposit will be required of all new full-time undergraduate students. This deposit is due May 1 for freshmen entering in the summer or fall semester; it is usually due two weeks after admission for transfer students. The deposit is credited toward tuition and orientation and is not refundable. Full-time readmitted students are required to submit an enrollment deposit that is usually due two weeks after admission.

Advanced Standing and Advanced Placement

Advanced Placement or Waiver by Examination

Advanced placement or waiver of a requirement will be granted on the basis of scores on the SAT subject tests according to the list that follows. Advanced standing (academic credit) is not assigned on the basis of SAT or ACT results. Note that the University Writing requirements and Columbian College's General Curriculum Requirement in foreign languages and cultures are not waived on the basis of these tests.

Subject Test	Minimum Score	Exemption
American history	650	Waives Hist 71–72
French, Spanish	690	Waives a two-year language
German, Latin	630	proficiency requirement

Credit by Examination, from Service Schools, from Noncollegiate Organizations, and by Nontraditional Methods

Assuming there is no duplication of course work, a maximum of 30 credit hours may be assigned upon admission to the University for any combination of the following except as noted below.

College Board Advanced Placement (AP) Tests—On the basis of a score report sent to the Office of Admissions from the Educational Testing Service at the student's request,

undergraduate credit is assigned for scores of four or five on most Advanced Placement Tests. Test scores below four are not accepted for assignment of academic credit. The Advanced Placement Tests are administered in the secondary schools in May of each year. Normally only students who complete a course designated as Advanced Placement are prepared for the examination. Students should arrange for the examination through the secondary school attended or with the College Board, Advanced Placement Tests, CN 6671, Princeton, N.J. 08541–6671.

College Board College-Level Examination Program (CLEP)—CLEP offers two types of examinations: General and Subject Examinations. CLEP General Examinations are offered in five areas: English composition, humanities, mathematics, natural sciences, and social sciences and history. CLEP Subject Examinations measure achievement in specific college-level courses and are offered in 32 subjects. Students should arrange for the examinations with the College Board, College-Level Examination Program, CN 6601, Princeton, N.J. 08541–6601.

With the exception of the English composition examination, for which no credit is given, credit is assigned for the General Examinations passed at approximately the 50th percentile or above. In the School of Business, credit is not assigned for the mathematics examination. In the School of Engineering and Applied Science, credit is not assigned for the mathematics or natural sciences examinations.

Credit is assigned, with some exceptions, for the Subject Examinations passed at the level recommended in the College Board model policy. Credit for the CLEP Subject Examinations may not be earned by passing the examination after having taken an equivalent college-level course. See the School of Business for specific restrictions on CLEP credit for applicants to that school.

Special Departmental Examinations for Undergraduates—Credit may be assigned for Special Departmental Examinations administered by Columbian College departments to students enrolled in all undergraduate divisions of the University.

International Baccalaureate—GW awards 6 to 8 credit hours for Higher-level scores of 6 and above with the exception of English language. Students who have passed English A1 with a grade of 6 or 7 will receive 3 credit hours for Literature. No credit will be assigned for English A2 or English B or for standard-level examination scores.

Credit Earned Through USAFI and DANTES—Except to students enrolled in the School of Business, credit is assigned for approved United States Armed Forces Institute (USAFI) and Defense Activity for Nontraditional Education Support (DANTES) courses.

Credit from Service Schools—Except to undergraduates admitted to the School of Business, a limited amount of credit may be assigned for selected service school courses.

Office of University Students

The Office of University Students makes on-campus credit courses available to nondegree, visiting students. Applications can be obtained by calling 202-994-1972 or at www.gwu.edu/~ous. See the section on the Office of University Students under Other Programs and Services in this Bulletin.

FEES AND FINANCIAL REGULATIONS

The following fees and financial regulations were adopted for the academic year 2006–07.

Information on tuition and fees for the summer is available at www.gwu.edu/summer.

Tuition Fees

For undergraduates entering GW in academic year 2006–07, the University has adopted a fixed-rate tuition plan, with the following academic-year tuition fees guaranteed not to increase for up

to five years of full-time* undergraduate study: \$37,790 for students entering Columbian College of Arts and Sciences (including its School of Media and Public Affairs), the School of Business, the School of Public Health and Health Services, the School of Engineering and Applied Science, and the Elliott School of International Affairs.

For undergraduates who entered GW in academic year 2005–06, the fixed-rate tuition remains in effect as previously stated: \$36,370 for students in the schools listed just above.

For undergraduates who entered GW in academic year 2004–05, the fixed-rate tuition remains in effect as previously stated: \$34,000 for students in Columbian College of Arts and Sciences (excluding its School of Media and Public Affairs), the School of Business, and the School of Public Health and Health Services; \$35,000 for students in the School of Media and Public Affairs, the School of Engineering and Applied Science, and the Elliott School of International Affairs.

The tuition rates that follow are set for academic year 2006–07, with the rates subject to annual increase, for all undergraduates who entered the University earlier than fall 2004. Excluding the School of Media and Public Affairs: \$33,590; in the School of Media and Public Affairs: \$34,590 for majors and \$34,090 for minors.

Part-time and nondegree students are charged \$1,050 per credit hour except in the School of Media and Public Affairs, for which part-time students are charged \$1,080 per credit hour.

*A full-time program is defined as 12–17 credit hours per semester; a part-time program is fewer than 12 credits per semester. Undergraduates taking more than 17 credits per semester will be charged at the rate of 1 credit hour for each credit exceeding that limit. Undergraduates in the School of Engineering and Applied Science who are required to take 18 or 19 credits in some semesters will not be charged for the eighteenth and nineteenth credits.

Fees stated here exclude undergraduate health sciences programs; consult the Office of Health Sciences Programs in the School of Medicine and Health Sciences for applicable fees.

Voluntary Library Fee—Each semester the Registration Schedule and Invoice includes a voluntary gift for the University libraries. Check the box labeled “Library Gift Decline” and omit the amount from your payment if you do not wish to include the library gift in your reimbursement to the University.

Note: Information on the fee structure for campus housing and meal plans appears on pages 32 and 33. Some courses carry additional fees, such as a laboratory or material fee, charged by semester as indicated in course descriptions and the Schedule of Classes. Students admitted to the B.A./J.D., B.A./M.D., and Integrated Engineering and Medicine programs pay a fixed net tuition rate annually; the amount is announced in the letter of admission.

Special Fees and Deposits (Nonrefundable)

Application fee (electronic)	\$60
Application fee (paper)	70
Advance deposit, required of each entering or readmitted full-time undergraduate	800
Orientation fee, charged each entering full-time undergraduate	250
Student Association fee, per credit hour, to a maximum of \$15 per semester	1
Late registration beginning the first day of the semester	80
Registration for continuous enrollment or leave of absence	35
Graduation fee	100
Late application for graduation (see Calendar)	35

Late payment fee (see Past Due Accounts, below)	75
Late authorization fee for third-party payment (see Third-Party Payment, below)	100
Returned check fee, charged a student whose check is improperly drafted, incomplete, or returned by the bank for any reason	35
Special Columbian College departmental examination to qualify for receiving credit (advanced standing), waiver of requirement, or both	100
Waiver examination to qualify for advanced placement	25
Engineers' Council fee (charged all SEAS students), per semester	8
English test for international students (when required)	20
Study abroad fee	300
Transcript fee	5
Replacement of lost or stolen picture identification card	25
Replacement of diploma	50

Payment of Fees

A student who registers for classes in any semester or session incurs a financial obligation to the University. Payment of tuition and fees is due upon receipt of the Schedule and Invoice or at the time of registration. Except for students on the monthly payment plan, tuition is to be paid in full by the first day of the semester or upon registration if registration is after the first day of the semester. The University reserves the right to revoke the registration, effective to the beginning of the semester, of any student who fails to make full payment. Students whose registrations have been revoked or canceled for failure to make timely payments are not permitted to attend class and may not occupy University housing.

In addition to payment of tuition and fees, the University requires that a student confirm his or her registration. Students whose registrations are not confirmed by the third week of the semester may be canceled from all courses. Receipt of the tear-off portion of the Schedule and Invoice, typically mailed with the student's payment, is requested for confirmation of registration. All students whose registrations are not confirmed are notified in writing that their registrations will be canceled and are asked to contact the Student Accounts Office immediately. Charges for residence halls and meal plans are in accordance with license agreements signed by the student; questions concerning those charges should be referred to the Community Living and Learning Center or Business Services, respectively.

Monthly Payment Plan—This payment plan is open to all students and is available for the fall and spring semesters only. Students must complete and submit an application by August 15 for the academic year or by January 5 for the spring semester to participate in the plan. Upon approval of the application, the student will be billed for each payment. The monthly payment plan for the academic year begins in June and ends in March, with the first five payments applied to the fall account and the second five applied to spring. For spring semester only, the plan begins in November and ends in March. Under the plan, all payments are due on the first of each month. The student will receive a monthly bill, but no interest or late fees will be charged provided payments are received as scheduled. Students who enroll in the plan after the first month must make up all payments to the month of enrollment. Interest and a late payment fee are assessed all accounts not paid in full by October 5 for fall and March 5 for spring. An outside vendor administers the plan and charges a one-time participation fee in addition to interest and late fees for any payments received late. For more information, see www.gwu.edu/~sao/payment_plan.html.

Third-Party Payment—The University accepts employer vouchers or purchase orders that are not contingent upon receipt of grades. Under all circumstances, the charges for tuition and fees remain the responsibility of the student. Authorization from a sponsor to be billed for a student's charges must be received in the Student Accounts Office by the end of the third week of the fall or spring semester. A late authorization fee may be incurred for responses received after these times. Bills are mailed to sponsors in October for the fall semester and in February for the spring semester. Should a sponsor fail to remit payment to the University, the University will contact the student for payment. Students whose employers or sponsors reimburse them for tuition and fees after receipt of grades must pay in full upon receipt of the Schedule and Invoice or at the time of registration to avoid interest, late fees, and/or cancellation of registration. Students whose tuition is paid in full or part by employee benefits or teacher tuition remission must pay any remaining balance by the stated due date to avoid interest, late fees, and/or cancellation of registration.

Past Due Accounts—Accounts that are past due are encumbered by the University. A student whose account is encumbered may not register for future semesters and may not receive diplomas or transcripts. Late payment fees and interest may also be assessed each month that the account has an overdue outstanding balance. Please see the University's Tuition Payment Disclosure Statement at www.gwu.edu/~sao/disclosurestatement.pdf for more information on those fees and billing practices. Accounts that are more than 90 days past due are referred to an agency and/or attorney for collection. The student is then responsible for all charges, costs, and fees due to, or incurred by, the University as well as all costs, fees, and charges incurred by the agency and/or attorney, including attorney's fees. Students whose registrations have been

revoked or canceled for failure to make timely payments are not permitted to attend class and may not occupy University housing.

Dishonored/Returned Checks—A student whose check is returned unpaid by the bank for any reason will be charged a returned check fee and will be responsible for any associated costs and/or attorney's fees incurred by the University should a civil lawsuit or other collection effort be instituted to collect on such dishonored check. In any case where the University has reason to believe that a student presented a dishonored check in bad faith, the University may, in addition to any collection efforts, refer the matter to the proper authorities for criminal prosecution.

Withdrawals and Refunds

Applications for withdrawal from the University or from a course after the registration period must be made in accordance with procedures outlined under University Regulations in the sections Complete Withdrawal From the University, and Adding and Dropping Courses, respectively. Financial aid recipients must notify the Office of Student Financial Assistance in writing. No refund of the tuition deposit required of entering students is granted.

In authorized withdrawals and changes in schedule, cancellations of semester tuition charges and fees will be made in accordance with the following schedule for the fall and spring semesters:

1. *Complete withdrawal from all courses (on-campus students):*

Withdrawal dated on or before the end of the first week of the semester	80%
Withdrawal dated on or before the end of the second week of the semester	60%
Withdrawal dated on or before the end of the third week of the semester	40%
Withdrawal dated on or before the end of the fourth week of the semester	25%
Withdrawal dated after the fourth week of the semester	None

2. *Partial withdrawal*: If the change in program results in a lower tuition charge, the refund schedule above applies to the difference.
3. Regulations governing student withdrawals as they relate to residence hall and food service charges are contained in the specific lease arrangements.
4. *Summer Sessions*: In cases of authorized withdrawals from courses, refunds of 75% of tuition and fees will be made for courses dropped within the first seven calendar days of the start of a session. No refund will be made for courses dropped thereafter.

Courses that do not follow the traditional semester may have different refund policies.

The above information regarding cancellation of tuition charges and fees after withdrawal from the University may not apply to entering students who are recipients of federal aid; those students should check with the Student Accounts Office for the applicable cancellation schedule.

Refund policies of the University are in conformity with guidelines for refunds as adopted by the American Council on Education. Federal regulations require that financial aid recipients use such refunds to repay financial aid received for that semester's attendance. This policy applies to institutional aid as well.

In no case will tuition be reduced or refunded because of absence from classes.

Authorization to withdraw and certification for work done will not be given a student who does not have a clear financial record.

FINANCIAL AID

The George Washington University offers a program of financial assistance for students.

Undergraduate aid consists of two basic types: awards for academic achievement or talent without reference to financial circumstances (merit scholarships) and scholarships, grants, loans, and employment based on both academic achievement and demonstrated financial need. All

undergraduate gift aid (institutional scholarships and grants and federal grants) requires that the recipient be working on the first undergraduate degree and be registered for a full-time course load on campus at GW. (Financial aid for study abroad is limited to approved programs; applicants must attend a session on financial aid for study abroad.) Loans and community facilitator positions not based on financial need are available. In general, continuation of undergraduate aid does not extend beyond ten semesters, or the end of the senior year, or the number of credits sufficient to graduate, whichever comes first. (A non-GW study abroad semester counts as one of the ten semesters.)

Gift aid (scholarships, grants, fellowships, assistantships, etc.) is taxable to the extent that it exceeds the allowable costs of tuition, fees, and required books and supplies or is dedicated to other costs, such as room and board. Federal grants may be taxable if, together with other gift assistance, they exceed the allowable costs. In the case of a student who is awarded tuition scholarships, grants, or awards from more than one source, the combined amount cannot exceed tuition charges; institutional aid will be adjusted to this limit.

In general, consideration for financial aid is restricted to students in good academic standing who meet the minimum grade-point average for particular awards and are not financially encumbered by any other University office. Awards may be rescinded if satisfactory academic progress standards are not met. Applications for institutional or federal aid cannot be processed if the relevant tax returns have not been filed in accordance with the IRS Code. The University reserves the right to ask for documentation necessary to determine aid eligibility. Documents submitted as part of aid applications become the property of the University and cannot be returned. Federal regulations require that the University report suspected cases of fraud or misrepresentation to the appropriate federal, state, and local authorities.

Information in this section is accurate at the time this Bulletin is prepared for press. The Board of Trustees reserves the right to change financial aid policies as it deems necessary. Additional information is contained in the Financial Aid Sourcebook and the Satisfactory Academic Progress statement available on-line. Future changes in federal regulations or institutional policies may alter the application requirements or program guidelines.

Merit Aid

The University has merit aid programs of scholarships and awards for students with superior academic credentials or talents. These programs are based entirely on merit, without regard to financial need. Renewal is dependent on satisfactory academic progress relevant to the specific award in at least 12 credit hours per semester and the necessary grade-point average. Merit scholarships, including GW-sponsored National Merit Awards, cannot be combined.

Presidential Academic Scholarships—for incoming freshmen. Partial tuition scholarships are awarded to finalists in national academic competitions such as National Merit, National Hispanic Scholars, and National Achievement for Outstanding Negro Students. Members of Phi Theta Kappa or Alpha Beta Gamma who are transferring from community or junior colleges and have achieved grade-point averages of 3.7 and above in 56 transferrable hours will be considered for partial tuition awards. A GPA of 3.0 (*B*) on 12 earned credits per semester, exclusive of courses not counted toward graduation, is required for renewal of the Presidential Academic Scholarship.

Merit scholarships are also available to students admitted to the seven-year integrated B.A./M.D., the SEAS/M.D., and the six-year B.A./J.D. programs; offering a unique fixed-tuition plan, this arrangement allows families to plan and finance their student's undergraduate and medical or law education. These integrated programs require a 3.0 GPA on 15 earned credit hours per semester for renewal.

Presidential Arts Award—partial tuition awards for incoming freshmen who have shown promise in the fine arts and in music, theatre, or dance. A GPA of 3.0 (*B*) and the recommendation of the relevant department is required for renewal.

Presidential Recognition Award—a partial tuition award for students currently receiving a merit award who entered GW by fall 2003 and have completed at least 60 credit hours at GW (a minimum of at least 15 credits per semester, excluding summer term). Review for the scholarship is done in May only; and the student must have at least a cumulative GPA of 3.8 for all course work at GW.

Elliott Engineering Honor Scholarships—partial tuition awards are offered to outstanding incoming SEAS students with 30 or more transferable credit hours and a minimum of 3 credits of college-level chemistry or physics and 6 credits of college-level calculus or higher math. Awards may be renewed by current recipients who maintain the required GPA of 3.2 in 12 credits per semester, provided the recipient is enrolled full time in an engineering curriculum.

The J.B. and Maurice C. Shapiro Scholarship to the University of Oxford is awarded each spring to a graduating senior or recent graduate through a competitive process upon the nominee's acceptance to Oxford. To be eligible, applicants must have applied for the Rhodes or British Marshall Scholarships. All of these competitions require high academic standing, evidence of leadership, and dedication to the larger society through community service. The Shapiro Scholarship provides up to two years of study at Oxford, equivalent to the Rhodes Scholarship. The J.B. and Maurice C. Shapiro Endowment funds two scholarships per year—one new and one renewal. The Shapiro Scholarship program began in 1992.

The Bender Scholarship to the University of Cambridge is funded by an endowment, the Bender Scholarship Fund. Every other year, the Bender Scholarship is open for competition.

Graduating seniors, recent graduates, and third-year law students who participated in the Rhodes and/or British Marshall competitions are eligible for the Bender Scholarship. The endowed scholarship provides for up to two years of study at the University of Cambridge. The award provides for an educational experience equivalent to that of a British Marshall Scholar attending Cambridge. The Bender Scholarship criteria are high academic achievement, evidence of leadership skills or potential, and community service. The first GW Bender Scholar attended Cambridge in 1992.

Pembroke/GW Program—The George Washington University established a special relationship with Pembroke College in Oxford, whereby up to six GW juniors would be placed at the College for one year and enrolled as fully matriculated students of the University of Oxford. These placements are determined in an annual competition that takes place in the fall. The Committee evaluating candidates forwards to Pembroke College applications of the finalists. Pembroke then makes the final decision on placements. Many GW students have spent a year at Oxford in this program.

Need-Based Aid

The University offers extensive programs of scholarships, grants, loans, and employment based upon demonstrated need. The University participates in the Federal Perkins Loan, Federal Pell Grant, Federal Supplemental Educational Opportunity Grant, Federal Family Education Loans, and the Federal Work–Study program. All applicants are required to file both the PROFILE and the Free Application for Federal Student Aid (FAFSA), designating GW to receive their information, and to supply copies of signed federal income tax returns and W2 forms for the current tax year for student and parents (if dependent). For family members employed by an international organization, a letter is required from the employer certifying salary and all

benefits. Continuing students also need to submit a GW Financial Aid Application by the April deadline.

Incoming freshmen must file applications and supporting credentials for financial aid by February 1 for the next academic year; transfer students, by April 1. Continuing students must file the PROFILE and FAFSA forms by April 21, and submit the GW Financial Aid Application for Continuing Undergraduate Students and supporting tax documents to the Office of Student Financial Assistance no later than April 21. March 1 is the deadline for the summer sessions. Summer aid is limited to federal or alternative loans. A student must reapply each year for all need-based aid, including need-based scholarships; renewal is contingent upon funds being available when the student completes the application.

The George Washington Guaranteed Grant—The GW Guaranteed Grant is available only to new undergraduate students who entered GW in fall 2004 and thereafter and who are charged full-time tuition according to the University's fixed-tuition initiative and who receive a need-based financial aid package for their initial period of enrollment at the University. This need-based grant will be part of a student's initial financial aid package and is guaranteed for up to 10 consecutive semesters of full-time undergraduate enrollment at GW. For renewal of the grant, the student must be enrolled and be charged as a full-time student and must maintain satisfactory academic progress per the guidelines of the Office of Student Financial Assistance. The award will be confirmed upon receipt and review of signed copies of the parents' and student's most recent federal tax returns (with requested schedules) and W2 statements. Students showing additional need beyond the GW Guaranteed Grant will be considered for assistance from all other resources administered by the Office of Student Financial Assistance. While this grant can be combined with other institutional need-based grant awards, a student may not receive the GW

Guaranteed Grant in combination with merit awards, GW employee benefits, or the GW Family Grant

University Scholarships—Full and partial tuition scholarships begin in the fall semester and may be renewed through the senior year, provided the holder reapplies by the published deadlines, maintains a *B2* average or better, completes 12 credits per semester, and continues to demonstrate financial need. All applicants for need-based aid are considered for these awards.

Sherman Page Allen Memorial Scholarship Fund

Mary J. Anderson Scholarship

Byron Andrews Scholarship

D.F. and J.D. Antonelli Scholarship Fund

Athletic Scholarship Fund

Stanley M. Baer Scholarship in Electrical Engineering

Sigrid Weeks Benson Scholarship

Gail E. Boggs Engineering Scholarship

Bou Family Foundation Scholarship

Henry N. Brawner, Jr., Foundation Scholarship Fund

A.D. Britt Scholarship Fund

Frederick Albert and Alma Hand Britten Scholarships

Barbara Willmarth Callahan Scholarship Fund

Mary Ellen Caplin Scholarship

Elsie M. Carper Undergraduate Scholarship Fund

Emma K. Carr Scholarships

Henry Harding Carter Scholarship

Maria M. Carter Scholarship

Paul E. Casassa Memorial Foundation Scholarship

James Edward Miller Chapman Educational Foundation Scholarship

Columbian Women Scholarship Funds

Victoria Briggs Scholarship Fund

Elizabeth V. Brown Scholarship Fund

Grace Ross Chamberlin Scholarship Fund

College Women's Scholarship Fund

Columbian Women Members' Scholarship Fund

Arline Hughes Dufour Scholarship Fund

Dr. Watson W. Eldridge, Jr., and John F. Eldridge Scholarship Fund

Founders of Columbian Women Scholarship Fund

Ross Lees Hardy Foundation Scholarship Fund

Lillian Young Herron Scholarship Fund

Nellie Maynard Knapp Scholarship Fund

Marcia B. Kraft Scholarship Fund

Janet McWilliams Scholarship Fund

Marie-Louise Ralph Turner Scholarship Fund

Cora and John H. Davis Scholarship

Isaac Davis Scholarship

Bertha B. Day Scholarship in Civil Engineering

District of Columbia Daughters of the American Revolution Scholarship

Estella Constance Drane Scholarship

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Henry Parsons Erwin Scholarship

Robert Farnham Scholarship

Esther Brigham Fisher Scholarship

Louis E. Giles Memorial Scholarships

Gary C. and Leslie Granoff Scholarship Fund

Gridiron Foundation of the Gridiron Club Scholarship

Gruss Scholarship Fund

Isadore and Bertha Gudelsky Family Scholarship

Theo Campbell Hartman Scholarship

Elma Lewis Harvey Scholarship

Hazelton Scholarship

Adele Melbourne Holmes Native American Scholarship

Albert A. and Esther C. Jones Scholarship Fund

Allen M. Jones Scholarship Fund

David B. and James L. Karrick, Jr., Scholarship Fund

Samuel and Elizabeth Kay Scholarships

Amos Kendall Scholarship

L. Poe Leggette Memorial Scholarship Established by WRGW

Thaddeus A. and Mary Jean Lindner Scholarship Fund

Calvin D. Linton Endowment Scholarship Fund

Mary and Daniel Loughran Scholarship

Martha's Marathon Residence Hall Scholarship

Marshall Memorial Scholarship Fund

Maud E. McPherson Scholarship

Mensh Family Scholarship

A. Morehouse Scholarship

E. K. Morris Education Fund Scholarships

Helen Marie and Thomas E. Orr Scholarships

Henry and Caroline Orth Scholarship Fund

Thornton Owen Scholarship

Phi Delta Gamma Scholarships

Fred B. and Alma D. Pletcher Scholarship Fund

Levin M. Powell Scholarships

Jack B. Sacks Foundation, Inc., Scholarship

Henry Whitefield Samson Scholarship Fund

Scottish Rite of Freemasonry Scholarship Fund

Cecelia M. Sehrt Scholarship Fund

Sejong Scholarship Fund

Dorothy M. and Maurice C. Shapiro Scholarships to the University of Oxford

Dorothy M. and Maurice C. Shapiro Traveling Fellowship

Lula M. Shepard Scholarships

Mildred Shott Scholarship Fund

Margaret Lucille Snoddy Scholarship

David Spencer Scholarship

George Steiner Scholarship in Music

Mary Lowell Stone Scholarship

Charles Clinton Swisher Scholarships

Stephen Joel Trachtenberg Scholars Program

University Award for Phi Beta Kappa

University Players Scholarship in Memory of L. Poe Leggette

William Walker Scholarship

The Washington Post/Eastern High School Incentive Scholarship Program

Wanda Webb Memorial Scholarship

Abigail Ann Brown and Henry Kirk White Scholarship Fund

John Withington Scholarship

William G. Woodford Scholarship

Ellen Woodhull Scholarship

Barbara Jackman Zuckert Scholarship Fund for Blind Part-Time Students

Activity Awards—Students may be considered for the following activity awards during the semesters they are actively involved. Additional information can be obtained from the directors of the programs: Cheerleading Award; George F. Henigan Award in Debate; Pep Band Award.

GW Family Tuition Grant

Families with two or more dependent children simultaneously enrolled as full-time undergraduates in a first-time degree program at The George Washington University can apply for the GW Family Grant for the younger sibling(s). This is a half-tuition grant that can be awarded for the full academic year or for the fall or spring semester only and requires that all students being considered are charged the full-time tuition rate for their program. The grant is contingent on the recipient's and his or her sibling(s)' maintaining a 2.0 grade-point average and reapplying by the deadline. The grant is not available in any semester in which the older

sibling(s) is enrolled in a non-GW-affiliated study abroad program. Contact the Office of Student Financial Assistance for an application, which includes submission of a copy of the parents' federal tax return as verification of the dependent status of the students. International students must provide certification that they are dependent siblings either from their parents' employer (if an embassy or international organization such as the World Bank or International Monetary Fund) or from GW's International Services Office. The deadline is July 1 preceding the academic year; applications received after the deadline are awarded on a funds-available basis.

Loan Funds

Federal Stafford Loans—George Washington University is an eligible participant in the Federal Stafford Loan Program. This is a variable interest rate loan currently capped at 8.25%; repayment is up to 10 years. Eligible students may apply for up to \$2,625 as freshmen, \$3,500 as sophomores, and \$5,500 as juniors and seniors. For students who receive Subsidized Stafford funds as part of their need-based financial aid award, the government pays the interest while they are enrolled in school at least half-time and for six months afterward. Students ineligible, or only partly eligible, for subsidized funds may apply for an Unsubsidized Stafford Loan up to the same limits to cover their family contribution. Terms and conditions are the same, except that the student borrower is responsible for all interest that accrues on the unsubsidized loan from the date it is disbursed; deferments are available. Independent students (and students whose parents are denied a PLUS loan) are eligible to borrow additional Unsubsidized Stafford funds of \$4,000 as freshmen and sophomores and \$5,000 as juniors and seniors.

Federal Parent Loan for Undergraduate Students (PLUS)—George Washington University also participates in the PLUS program. This is a government-sponsored loan that can be used to supplement the student's Federal Stafford Loan or to help with the family contribution. It is a

credit-based, variable-rate loan currently capped at 9% for first-time borrowers. Each academic year, parents without an adverse credit history may apply for a PLUS loan up to the cost of education, minus financial aid, for each dependent child attending college at least half-time. Loan repayment begins within 60 days of the last disbursement and the maximum repayment term is 10 years.

Please note that Federal Stafford (Subsidized and Unsubsidized) and Federal PLUS loans are made by lenders, including banks, credit unions, and savings and loan associations. The loans are insured by a guaranty agency and reinsured by the federal government; origination fees are deducted from loan proceeds prior to disbursement. Families who intend to use loan funds for payment of University charges at time of registration should submit a loan application and all supporting documents to the Office of Student Financial Assistance no later than May 1 for the fall semester, October 1 for the spring semester, or March 1 for summer sessions.

First-time undergraduate borrowers' disbursements are delayed by 30 days after the first day of classes. Note that federal statute requires multiple disbursements of Stafford and PLUS loans. Recipients of one-semester-only loans receive the loan proceeds in two disbursements. Federal regulations require loan proration if the student's last loan period is less than a full academic year. Students may not borrow against or take out an emergency loan on their next semester's loan disbursement until the first day of classes for that term.

Alternative Loans—In partnership with our preferred lenders, GW offers competitive alternative loan options to qualified students. These loans offer attractive interest rates and repayment options. Students and/or families should compare the Stafford, PLUS, and this program to determine which program better fits into the family budget. The loans allow the

student to borrow up to 100% of GW's annual undergraduate cost of attendance less any current financial assistance. More information can be obtained from our website gwired.gwu.edu/finaid.

Other Loan Funds—The following loan funds are available to degree students. Complete information regarding each loan is available from the Office of Student Financial Assistance, Fiscal Section.

Joanne Jacobs Student Loan Fund

Jessie B. Martin Loan Fund

Jack and Anne Morton Loan Fund

Barney Plotnick, M.D., Student Loan Fund

Hiram Miller Stout Memorial Loan Fund

University Student Emergency Loan Fund

Edmund W. Dreyfuss Loan Fund

Peter and Doris Firsht Loan Fund

In addition, the Inner-City Special Student Assistance Loan Fund is available through the GW Multicultural Student Services Center.

Student Employment

The University participates in the Federal Work–Study Program. Inquiries should be addressed to the Office of Student Financial Assistance. Work–study job placement is handled by the Career Center. In addition, the Career Center maintains a registry of both full-time and part-time positions available in the Washington area for undergraduate and graduate students. After registration, students may apply at the Career Center for interviews and referrals to positions for which they are qualified.

International Students

Undergraduate international students with proven financial need who have completed two semesters of full-time work (30 credit hours) at this University with a *C* average are eligible to apply for University and Alumni Awards. Aid is awarded in the spring for the following academic year. See instructions for applying for undergraduate financial aid, above. For those not filing a U.S. tax return, a letter from the employer, certifying salary and benefits, is required.

The maximum award for an international student is \$10,000 including any merit scholarship offered at the time of admission.

Students who wish to study in the United States should have sufficient funds available to cover expenses for one full year before attempting to enter a college or university. The cost at this University for one academic year (September–May) was \$49,320 in 2005–06 and will be higher in 2006–07; generally speaking, expenses for international students are about \$2,000 over the stated figure, which includes room and board, tuition, books, clothes, and incidental expenses, but not travel, holiday, or medical expenses.

Veterans Benefits

The Veterans Benefits office assists students entitled to educational benefits as active-duty personnel, veterans, or as widows or children of deceased or totally disabled veterans with any problems that may arise concerning their benefits. This office also processes certification of enrollment and attendance to the Veterans Administration so that educational allowances will be paid.

When feasible, students entitled to educational benefits as active-duty personnel, veterans, or dependents of veterans should consult with the veterans counselor prior to submitting applications to the Veterans Administration. All such students should obtain the instruction sheet issued by the veterans counselor; it sets forth requirements to be fulfilled before certification of

enrollment can be made to the Veterans Administration and includes other information of general interest. Eligible students should be aware they must be admitted to a degree seeking program by the start of their third semester in order to continue receiving veterans benefits.

STUDENT SERVICES

Office of the Dean of Students

The Office of the Dean of Students provides counseling and information for students, administers the nonacademic student disciplinary system and student grievance procedures, assists students in resolving complex issues, and supports nonacademic program development. Staff members are well informed on University policies and the various student services provided on campus, enabling them to provide referrals and answers to many questions concerning general student life. Personal letters of recommendation for students applying to graduate and professional schools can be obtained from this office. The Office of the Dean of Students oversees the Community Living and Learning Center.

Campus Housing

Complete information concerning the University's residence halls is available from the GW Community Living and Learning Center (CLLC). Its website address is gwired.gwu.edu/cllc. CLLC offers a diverse range of community living environments and co-curricular initiatives designed to promote student growth and development. Among the several offices and services contained within CLLC is the Office of Campus Housing and Occupancy Management.

Admission to the University does not include a room reservation. The student will receive, with the notification of acceptance, University residence hall information, directions for completing an application for residence hall space or apartment accommodation, and a declaration of intent to attend the University.

Rooms and apartments are available for the academic year, with assignments on a first-come, first-served basis. Students in the residence halls must be registered full time in a degree program for at least 12 credit hours of academic course work during each of the fall and spring semesters. Seniors need not be enrolled for more credits than needed to graduate in their last semester.

Pursuant to an order of the District of Columbia Board of Zoning Adjustment, all freshman and sophomore students are required to reside in University housing. Exemptions are available for students who are married or have children, have disabilities or religious beliefs inconsistent with residence hall living environments, commute from outside of the Foggy Bottom/West End area, or have established permanent residency within the Foggy Bottom Campus/West End area. Guidelines on applying for an exemption from the University housing requirement are available at the Office of Campus Housing and Occupancy Management or at gwired.gwu.edu/cllc/housing. A map identifying the boundaries of the Foggy Bottom/West End neighborhood is also shown at gwired.gwu.edu/cllc/.

Early in the spring semester, eligible returning students submit an Intent-to-Return application to the Office of Campus Housing and Occupancy Management to reserve space in a residence hall for the next academic year. The application must be submitted by the date indicated in correspondence to students and on the CLLC web site. Students under 18 years of age must receive the permission of their parent or guardian in writing before submitting the Intent-to-Return application. Housing charges appear on the student's Schedule and Invoice for each semester.

Charges for residence hall space are determined by hall, room size, and amenities, with the 2005–06 most prevalent cost set at \$7,610 for the academic year. In the apartment halls the 2005–06 most prevalent charge per student is set at \$9,600 for the academic year, with prices

ranging higher and lower according to the space and amenities provided. Exact costs for the 2006–07 academic year will be announced.

The Office of Off-Campus Student Affairs

The Office of Off-Campus Student Affairs aims to educate GW students living in off-campus housing about their rights and responsibilities in the Foggy Bottom, West End, Foxhall, and greater metropolitan Washington communities. The Office provides students with resources and information to make good choices and positive contributions in the community, encouraging personal responsibility, neighborhood courtesy, and civic involvement. The Office works with neighbors in the local community to respond to concerns about student behavior in the local neighborhoods.

GW Dining

All undergraduate students residing in on-campus housing are required to participate in a minimum nonrefundable Colonial Cash plan according to class standing (amounts listed are for the 2005–06 academic year): freshmen, \$3,000; sophomores, \$2,500; juniors, \$2,000; seniors, \$1,000. The Colonial Cash plan is designed to provide convenience and flexibility in spending at a variety of locations and services. Current information regarding the Colonial Cash plans and all related policies is available at gworld.gwu.edu.

Student Health Service

The Student Health Service is an outpatient clinic staffed by physicians, nurse practitioners, and physician assistants who can evaluate and treat most of students' medical problems. Visits should be arranged by appointment; urgent problems may be seen on a walk-in basis if necessary. Charges for visits, labwork, and medication apply. Psychiatric evaluation and short-

term therapy appointments and crisis intervention are available. Health education and outreach programs on a variety of topics are provided throughout the year.

For serious emergencies occurring during hours when the Student Health Service is closed, students may go to the Emergency Room of the University Hospital for treatment. All fees are the responsibility of the student.

Students must be currently enrolled on campus in the University to receive treatment at the Student Health Service. Students enrolled in off-campus programs and continuing education programs are not eligible. Bills incurred both in and outside of the Student Health Service (for example, x-ray work, laboratory work, and office visits to private physicians) are the responsibility of the student. Additional information about the Student Health Service can be found at gwired.gwu.edu/shs.

Health and Accident Insurance

The University recommends that all students be covered by health and accident insurance. For information on health insurance offered through the University, contact the Chickering Group at 1-800-213-0579 or www.chickering.com.

Immunization Requirements

It is the law in the District of Columbia that all students under the age of 26 have a record on file with the Student Health Service documenting immunity to Measles, Mumps, and Rubella (two immunizations with the initial dose given after the first birthday or positive titers), Varicella (chickenpox—by immunization, documented history of disease or positive titers) and a current Tetanus/Diphtheria booster (within 10 years prior to the beginning of the semester). This requirement applies to all students regardless of their program of study or degree status. Students registering for the first time will be able to do so without complete records on file, but any

subsequent registration will be blocked if this requirement has not been fulfilled. Immunization forms are sent out by the GW admitting office. Forms can be downloaded from gwired.gwu.edu/shs. In addition to the required immunizations, the Hepatitis B and Meningitis vaccines are recommended. The Student Health Service can give all inoculations on a fee for service basis. Further information is available at (202)994-6827.

University Counseling Center

University Counseling Center services help students resolve personal, social, career, and study problems that can interfere with their academic progress and success. Services include individual counseling, crisis intervention, group counseling, and workshops on topics such as time management, study skills, procrastination prevention, family and relationship issues, choosing a career, stress management, conflict management, and self-esteem/self-development. The Center offers consultation and training programs for student, faculty, and staff groups. Career counseling and referral services are available to GW students. The Center provides pamphlets, books, and tapes through its self-help library. Students can apply for tutors through the Center's Peer Tutoring Service, which matches tutors with students requesting assistance for specific academic courses. Further information about all services and links to other psychoeducational materials can be obtained by visiting the Center's website at gwired.gwu.edu/counsel.

Career Center

The Career Center promotes effective career planning, teaches job search strategies, and facilitates contacts between GW students, alumni, and prospective employers through its many services. Services include full- and part-time job listings; internship listings; career consulting; workshops (including job search strategies, letters and resumes, and effective interviewing); the career resource room; on-campus recruiting; resume critiques; facilitating the federal work-study

program; cooperative education; computer- and Internet-based job resources; and a credentials service that supports graduate/professional school applications. Further information on the Career Center is at gwired.gwu.edu/career.

International Services Office

The International Services Office provides services to GW's international students, scholars, faculty, and staff. The office provides advising on a variety of personal issues, including cultural adjustment, living conditions, academic concerns, and finances; provides immigration assistance and information on U.S. government requirements and regulations specific to the international community; conducts orientation programs to assist in living, studying, and working in the United States; and serves as a resource center for the University community on issues of cross-cultural understanding.

Disability Support Services

Disability Support Services (DSS) provides and coordinates accommodations and other services for students with a wide variety of disabilities, as well as those temporarily disabled by injury or illness. Accommodations are available through DSS to facilitate academic access for students with disabilities. To be eligible, a student must provide to DSS documentation that substantiates the need for such services in compliance with Section 504 of the Rehabilitation Act and the ADA. Services provided without charge to the student may include registration assistance, readers, interpreters, scribes, learning specialist services, adaptive materials and equipment, assistance with note taking, laboratory assistance, test accommodations, and referrals. DSS does not provide content tutoring, although it is available on a fee basis from other campus resources. The University does not pay for personal attendant care. DSS is located on the 2nd floor of the

Marvin Center and is open from 9 a.m. to 5 p.m. weekdays. Additional information is available at www.gwu.edu/~dss.

Multicultural Student Services Center

The Multicultural Student Services Center provides academic, co-curricular, and personal support services for all GW minority students to enhance minority student life at GW. Through the Center, minority students receive orientation to the various University resources, and are made aware of the many cultural activities and programs that exist on campus and in the greater metropolitan area. The Center provides professional and peer counseling, course advising, tutorial referrals, and campus and community mentoring programs. The staff is available to address students' academic and personal concerns.

The Multicultural Student Services Center also provides a wide range of services, educational programming, and social and cultural activities to enhance the multicultural ideals or cultural heritage, racial understanding, academic excellence, and continuous personal development for all students. The Center oversees the Diversity Program Clearinghouse, which supports various programs designed to educate the campus in areas of cultural diversity and socioeconomic issues. The Center houses a resource center with reference books and instructional materials, and coordinates various preparatory and precollege programs.

High School/College Internship Program—The Multicultural Student Services Center oversees the High School/College Internship Program (HI/SCIP), which enrolls highly motivated District of Columbia high school seniors. Participants enroll at GW as nondegree candidates, taking a maximum of 6 credit hours per semester in addition to their high school curriculum. Application to the HI/SCIP program is made through the student's high school guidance office, and decisions are made by the Office of Admissions.

Student Activities Center

The Student Activities Center furthers the educational mission of the University by offering programs, services, and facilities that foster the social and cultural development and school spirit of members of the University community. Staff members assist individual students and campus organizations with event planning, program coordination, and participation in special projects.

Programs and activities include advisement of campus organizations, registration of student organizations, planning and coordination of major campus events, and oversight of Greek Affairs, Colonial Inauguration, the Presidential Administrative Fellows Program, band and cheerleading, and intramural and club sports. Additional information about the services offered by the Student Activities Center, and about the various student organizations and committees, can be obtained from the *Student Planner and Handbook*.

Program Board—The Program Board, composed chiefly of elected and appointed students, has the primary responsibility of allocating resources for student programming on campus. In addition, the Program Board provides funding for activities presented by various campus organizations and encourages student participation in program planning through involvement in committees on the arts, concerts, festivals, films, parties, political affairs, and public relations.

Student Government—The George Washington University Student Association is made up of all full-time and part-time undergraduate and graduate students who are registered for academic credit on campus. A body of elected and appointed individuals is responsible for representing the interests of students at the University. The Student Association provides various services for students, such as academic evaluations, test and syllabus files, and the Student Advocate Service.

Student involvement in the governance of the University is also possible through participation in various administrative and Faculty Senate committees, advisory councils of the schools and

college, selected committees of the Board of Trustees, and specialized bodies, such as the Residence Hall Association, the Joint Food Services Board, and the Marvin Center Governing Board. This involvement has helped develop policies and programs beneficial to students and to the University community as a whole.

Student Organizations—Students are encouraged to become involved with existing student organizations or to initiate their own. There are approximately 350 registered organizations on campus, covering a broad spectrum of interests, including academic, professional, international, cultural, political, service, sports, hobbies, recreational, religious, and meditative groups as well as social fraternities and sororities.

The Cloyd Heck Marvin Center

The Marvin Center is the GW campus community center. The Marvin Center offers programs, services, and facilities for students, faculty, staff, alumni, and University guests. The Center's wide range of facilities includes dining locations, a theatre, lounges, recreational facilities, study rooms, travel agency, copy center, provisions grocery, GW Concierge, GW bookstore, and conference and meeting rooms in the Morris and Gwendolyn Cafritz Foundation Conference Center.

The Marvin Center provides facilities for programs conducted by the University Program Board, by academic departments that include the performing arts, and by other University organizations. The operation of the Marvin Center is overseen by Student and Academic Support Services.

The Marvin Center Governing Board is a representative body composed of students, faculty, staff, and alumni. The Board works closely with the Center's staff in the review and development of policies, guidelines, and procedures that direct the operation of the Center.

Religious Life

The University recognizes the contribution that religion makes to the life of its students and encourages them to participate in the religious organizations of their own choice. Several religious bodies sponsor various groups and form a link between the University and the religious community. The advisors of the religious organizations are available for counseling to enhance religious life on campus. Religious services and special observances are also provided for the University community as announced.

Major Program Events

Art Exhibits—The work of locally, nationally, and internationally known artists is shown in exhibitions in the Luther W. Brady Art Gallery in the Media and Public Affairs Building. Student art exhibits are presented each semester in the Dimock Gallery in Lisner Auditorium.

Concert Series—The Department of Music presents a series of concerts featuring faculty, guest, and student artists throughout each year. Other concerts are held regularly in the Marvin Center, Lisner Auditorium, and the Smith Center.

Dance—The Department of Theatre and Dance presents major dance concerts, informal studio performances, experimental events, television appearances, and lecture–demonstrations. Students may audition to participate and have the opportunity to choreograph, perform, and gain experience in the technical aspects of dance productions.

Glee Club, Jazz Band, and Orchestra—The University Singers, University Band, Jazz Band, and Orchestra are available to students either as credit courses or as cocurricular activities. All of these organizations present major performances to the University community several times a year, including regular winter and spring concerts. Chamber groups and jazz combos are regularly available for participation by all students.

Program Board—The University Program Board, through its various committees and in cooperation with other campus groups, regularly sponsors films, lectures, concerts, social activities, and special events.

Theatre—The Department of Theatre and Dance produces four major plays and musicals during the year on the proscenium/thrust stage in the Dorothy Betts Marvin Theatre. Additional works, including original and experimental plays, are produced in a more intimate studio theatre. Students can participate in all aspects of theatre and may receive credit toward their B.A. or M.F.A. degrees for some of their production work.

Athletics, Recreation, and Intramurals

The Charles E. Smith Center and Lerner Family Health and Wellness Center offer many facilities for student use, including courts for basketball, volleyball, and badminton; a jogging track; a swimming pool; gymnastics and weight rooms; racquetball and squash courts; and a sauna and lockers. A broad program of intramural and recreational activities is held in the Lerner Family Health and Wellness Center designed to accommodate various levels of skill, experience, and interest. The Mount Vernon campus is home to an artificial-turf soccer/lacrosse/field hockey facility, a softball field, and 32 tennis courts.

The University is a member of the National Collegiate Athletic Association (NCAA), the Eastern College Athletic Conference (ECAC), and the Atlantic 10 Conference. Its intercollegiate varsity teams compete against major universities throughout the region and nation in such sports as basketball, baseball, soccer, tennis, golf, cross-country, crew, swimming and diving, water polo, volleyball, and gymnastics.

OTHER PROGRAMS AND SERVICES

The major sections that follow describe the undergraduate programs and courses offered by Columbian College of Arts and Sciences, the School of Business, the School of Engineering and Applied Science, the Elliott School of International Affairs, and the School of Public Health and Health Services. This section briefly indicates some of the University's additional programs, services, and administrative units.

The George Washington University at Mount Vernon College

An integral part of The George Washington University, the Mount Vernon campus offers a traditional campus atmosphere a short distance from the Foggy Bottom campus. A distinct environment within the University, GW at MVC offers fully integrated academic courses and programs as well as social and athletic opportunities to all GW undergraduates. Students may reside either at the Mount Vernon or Foggy Bottom campus; all GW students have access to courses, programs, libraries, and other services at both campuses.

Courses at the Mount Vernon campus are offered by nearly all departments of Columbian College of Arts and Sciences and by selected departments and programs of the Elliott School of International Affairs and the Schools of Business, Engineering and Applied Science, and Public Health and Health Services. The University Honors Program maintains an office on the Mount Vernon campus and offers a residential program and a wide variety of courses. The campus is home to the interior design program at the undergraduate and graduate levels. Students and faculty move freely between the two campuses on the University shuttle that runs 24/7, taking 10 to 15 minutes.

GW at MVC offers a set of residential experiences, including the Elizabeth Somers Women's Leadership and Dean's Scholars in Globalization Programs. The Women's Leadership Programs include Women in Globalization, Economics, and Business; Women in U.S. and International

Politics; Women in International Arts and Culture; and Women in Science, Health, and Medicine. Each provides a one-year living and learning experience for first-year women with a set of courses linked around the theme of women's leadership, historical as well as contemporary. The program courses fulfill certain general requirements in all the undergraduate schools. The teaching assistants for the academic courses also live together with the students in the residence hall, developing co-curricular activities that emphasize the supportive community, tying together the various strands of the program. The intent of this program is to create an integrated community, which encourages energized classroom discussions that continue in the dining hall and the residence hall.

The Mount Vernon Campus Life Office coordinates student support services for GW at MVC, including the development of programs and services that create a distinctive environment for students on the Mount Vernon campus, cooperative programming with the Foggy Bottom campus, and the cultivation of leadership and community service opportunities for students.

University Honors Program

The University Honors Program is an enhanced educational program open to students enrolled in any of the undergraduate schools at The George Washington University. The Honors Program offers a special series of courses that are designed to engage and challenge talented students. Members of the Honors Program take one or more of these courses each semester as part of their undergraduate program of study. The courses range from small seminars that fulfill general curriculum requirements to special topics and cross-disciplinary courses.

In addition, the University Honors Program offers its students various special academic activities to complement the curriculum, such as the twice-yearly University Symposium, a weekend-long event that includes public lectures, discussions, and student presentations on a

notable topic or theme. The Honors Program administers three residential communities for its students as well as a center for national fellowship competitions to assist any GW student pursuing prestigious fellowship opportunities.

Students must apply for admission to the University Honors Program. Entering freshmen who are in the top 10% of their high school class or have achieved SAT scores above the 85th percentile may apply to the University Honors Program when they apply for admission to the University. In addition to high academic achievement, the Program seeks students who are accomplished beyond the classroom, whether in the creative arts, in community service or leadership ability, or in other distinctive endeavors. Current GW students who have achieved a cumulative GPA of 3.4 or higher and have at least four semesters left before graduating may apply to the program at the end of September for admission in the spring semester and at the end of January for admission in the fall semester. The Honors Program has special advisors to help students plan their program of study. Scholastic requirements for remaining in the Honors Program are listed under the major head of Honors in the course listings section.

A complete description of the University Honors Program is given in the Honors Program Handbook, available at the Honors Office or through its website: www.gwu.edu/~uhpwww. The website also gives a list of current classes and activities of the Honors Program.

Enosinian Scholars—Named for the first undergraduate academic society established at The George Washington University in 1822, the Enosinian Scholars Program is a special senior-year thesis program that requires two semesters of research, a written thesis, and an oral examination with outside reviewers. Students in the Enosinian Scholars Program may also pursue Special Honors in their department or program. Application to the Enosinian Scholars Program is made

through the University Honors Program, which administers the Enosinian Scholars Program; membership in the Honors Program is not required.

Welling Professors

The George Washington University has a category of distinguished “occasional” professorships known as the Welling Professors. The professorships are named for James Clark Welling, who was president of GW for most of the last quarter of the 19th century, during which time this institution assumed many of the attributes of a modern research university. The intent of the Welling Professorships, established in 1995, is to bring internationally distinguished scholars to GW on an occasional basis and engage them in the intellectual life of students and faculty through public lectures, small group discussions, and other forums.

Residential Educational Programs

Among the many living and learning communities available at GW are enhanced educational programs in which first-year students reside together and take a common course or series of courses. Programs include Politics and Values, JWF International Affairs, Dean’s Scholars in Globalization, and the Elizabeth Somers Women’s Leadership Programs. Further information is available from the GW Community Living and Learning Center.

Joint and Dual Degree Programs

A large number of five-year programs allow students to earn a bachelor’s degree and a master’s degree, with a modest amount of cross-crediting of course work. (Some programs require summer study to complete all requirements within five years.) Programs available within Columbian College of Arts and Sciences are listed under the department concerned; programs within the School of Business, the School of Engineering and Applied Science, and the Elliott School of International Affairs are listed under the School’s entry.

The Application for Admission lists special five-year programs leading to bachelor's and master's degrees that students may enter when they are admitted as freshmen. Most five-year programs that admit freshmen have specific performance criteria that must be met to remain in the program.

Joint degree programs are available for study toward the Doctor of Medicine degree: the integrated B.A./M.D. program described under Columbian College of Arts and Sciences, and the integrated engineering and medicine program, under the School of Engineering and Applied Science. In addition, Columbian College and the Law School offer a six-year Bachelor of Arts/Juris Doctor program.

Secondary Fields of Study

A program of secondary fields of study provides undergraduates opportunities for formal interschool study. Students must be enrolled in a degree program and in good academic standing to be eligible to take a secondary field in another school. The secondary fields generally consist of 12 to 18 hours of prescribed courses, with scholarship requirements determined by the school offering the field. Upon satisfactory completion of all requirements, the secondary field and the courses taken in support of the field are entered on the student's transcript. Information is available in the student services offices of the schools concerned.

Summer Sessions

Courses are offered during the summer by all degree-granting divisions of the University. Summer Sessions also offers special programs that are not available during the regular academic year. Courses are offered during both day and evening hours. Students who are enrolled at the University for the spring semester may register for the following Summer Sessions without special application. Those who wish degree status may seek admission from the appropriate

school within the University. Those who do not wish to work toward a degree at the University may apply through the process described in the Summer Sessions Announcement. For a complete statement concerning summer term work, see the Summer Sessions Announcement at www.gwu.edu/summer or contact 202-994-6360 or gwsummer@gwu.edu.

Study Abroad

Undergraduates who wish to study abroad during the academic year should contact the Office for Study Abroad concerning eligibility, appropriate procedures, and requirements for participation. Participants are billed GW charges for study abroad, rather than fees indicated by the visited school. To be eligible for the transfer of academic credit from study abroad, GW students must select a program from the University's authorized list of study abroad programs. Students must have a 2.75 cumulative grade-point average at the time of application and must have completed 45 credit hours prior to departure. Transfer students must complete one full semester at GW prior to application. Students who have a significant disciplinary history or who are on academic or disciplinary probation at the time of application are not eligible to study abroad. All programs of study abroad must be approved on the required forms prior to departure. Non-GW course credits earned in authorized programs with a *C* or above are transferable toward the appropriate degree at The George Washington University, provided there is no duplication of work done previously and faculty have designated each course with a GW course equivalent. Participants agree to abide by all procedures and regulations for study abroad as indicated in the Study Abroad Handbook, Memorandum of Agreement, and Participation Agreement distributed through the Office for Study Abroad. In addition to academic year programs, study abroad is available at varying locations during the summer; see Summer Sessions, above.

Office of University Students

The Office of University Students makes main-campus, credit-bearing courses available to those who are not currently degree candidates at this University. Such students, often employed in government or industry, may be taking courses to enhance their career potential or as a matter of personal interest. They may be candidates for higher degrees at other institutions, sent here for special work as part of a graduate program. They may be undergraduates matriculated elsewhere, taking courses for transfer to their own institution or preparing for graduate work.

The Office of University Students requires a minimum registration of 3 credit hours per semester or session, except in special circumstances as approved by the director. Medical and law courses are not available to nondegree students.

Entrance Requirements—The Office of University Students requires visiting, nondegree applicants to have appropriate academic preparation prior to enrollment. Prerequisites are specified in the departmental course descriptions in this Bulletin. Contact the specific department for further information regarding appropriate academic background for a particular course. In addition, the applicant who has previously attended this or another college or university must be in good standing at that institution. An applicant who has been suspended from any educational institution for poor scholarship will not be considered for admission for one calendar year after the effective date of the suspension. An applicant who has been denied undergraduate admission within this University will not be considered for admission as a nondegree student for the same semester for which the application was denied. Applications for admission through the Office of University Students are available online at the OUS website. For information on application and registration, please refer to the *Schedule of Classes* or visit www.gwu.edu/~ous.

Tuition and Fees—For information regarding fall and spring semester tuition and fees, see Fees and Financial Regulations in this Bulletin. For information on summer tuition and fees, see www.gwu.edu/summer or contact 202-994-6360 or gwsummer@gwu.edu.

Regulations—Prospective and registered students are urged to acquaint themselves with the regulations concerning attendance and withdrawal under University Regulations in this Bulletin or at www.gwu.edu/~ous.

The deadline for adding a course during the regular fall and spring semester is the end of the second week of classes. A course dropped during the first four weeks of classes will not appear on a student's transcript. A course dropped after the fourth week but before the end of the eighth week will be assigned the grade of *W* (Authorized Withdrawal). The deadline for dropping a course without academic penalty is the end of the eighth week of classes. The deadline for complete withdrawal from a student's entire program of courses without academic penalty is the end of the ninth week of classes.

If the symbol *I* (Incomplete) is assigned, the instructor normally sets a period (maximum of one year) within which the uncompleted work must be made up. An Incomplete that is not changed within one calendar year becomes a grade of *IF* on the student's record.

All adjustments to course schedules during a regular summer session must be made within the first seven days of the official start of classes.

Consortium of Universities of the Washington Metropolitan Area

The George Washington University is a member of the Consortium of Universities of the Washington Metropolitan Area. Twelve universities in the Washington area—American University, Catholic University of America, Gallaudet University, George Mason University, George Washington University, Georgetown University, Howard University, Marymount

University, Southeastern University, Trinity University, the University of the District of Columbia, and the University of Maryland—are associated in a Consortium through which they coordinate the use of their respective facilities. Students in approved programs leading to degrees in any one of these institutions have the opportunity to select from the combined offerings the particular courses that best meet their needs. This privilege is subject to regulations of the school in which the student is enrolled. Participation is limited to degree candidates. Law and medical students are excluded from participation, except for LL.M. candidates. See the *Schedule of Classes* for specific regulations and information concerning registration for Consortium courses.

Registration forms and instructions are available from the registrar of the institution in which the student is enrolled. Students register and pay tuition at their own institutions for all Consortium courses; course fees are payable to the visited institutions.

George Washington University students may enroll through the Consortium in the Army ROTC program offered at Georgetown University, the AFROTC program at the University of Maryland, or the Army ROTC or AFROTC at Howard University. Scholarships are available. Those interested should contact the ROTC enrollment officer at one of these universities. Limited credit for such courses (primarily advanced ROTC) may be assigned for electives to meet degree requirements at George Washington University; prior approval is required by the dean of the school in which the student is enrolled.

The University Libraries

The library collections of over two million volumes are housed in Melvin Gelman Library (the general library of the University), Jacob Burns Law Library, Paul Himmelfarb Health Sciences Library, the Virginia Campus Library, and Eckles Memorial Library on the Mount Vernon campus. The George Washington University is a member of the Association of Research

Libraries, whose mission “influences the changing environment of scholarly communication and the public policies that affect research libraries and the communities they serve.”

The libraries strive to fulfill the curricular and research needs of the University’s students. University appropriations supplemented by endowments and gifts provide electronic and paper research materials in the social sciences, the humanities, the sciences, engineering, education, business, law, medicine, and public health. Gifts from many sources have enriched the collections.

Information about using the libraries is available on the libraries’ websites and at library service desks. Individual and class instruction in the use of the libraries and orientation to library facilities are given by librarians upon request as well as through print, media, and computer-assisted instruction. Through use of the many journal article databases and online resources, students identify and locate desired research materials not easily found through more traditional methods. The libraries’ staff assist members of the University in using the rich resources of the Washington area and the unusual opportunities they offer for extensive research.

Students, faculty, and staff at George Washington University (except students in the Law School and Medical Center) may borrow directly and remotely, using the consortium loan service, from the libraries of the seven other academic institutions in the Washington Research Library Consortium (WRLC). Members of the GW community may also obtain resources from other libraries in the area and throughout the United States using other library consortial arrangements and interlibrary loan.

The libraries provide a WRLC combined online catalog representing nearly 3.8 million titles and over 7.4 million volumes. ALADIN, the online research portal for the libraries, offers access

to over 200 databases and can be accessed via the Internet from numerous computers in the libraries, residence halls, and University offices, as well as remotely from off campus.

The Writing Center

The Writing Center provides writing assistance to GW students for all courses, both undergraduate and graduate, in all schools of the University and at all levels of experience and expertise. Students receive assistance in identifying writing problems and learning how best to express ideas. Trained tutors (undergraduate peer tutors, graduate students, and the director and other members of the faculty) work with students individually on areas of specific need or interest. Tutors provide assistance in such areas as organizing a mass of information efficiently and clearly, using correct grammar and punctuation, getting started on a writing project, developing a thesis, providing evidence in support of an argument, and presenting the findings of an experiment or the solution to a research problem.

Honor Societies

Honor societies that maintain active chapters at George Washington University include Phi Beta Kappa and Sigma Xi as well as those specific to given academic fields, such as Alpha Epsilon Delta, Beta Alpha Psi, Beta Gamma Sigma, Delta Phi Alpha, Eta Kappa Nu, Omicron Delta Epsilon, Omega Rho, Pi Alpha Alpha, Pi Sigma Alpha, Pi Tau Sigma, Psi Chi, Sigma Delta Pi, Sigma Iota Rho, and Tau Beta Pi. The freshman honor society Phi Eta Sigma is open to qualified students in all undergraduate programs.

Prizes

The following academic prizes are supported by permanently endowed funds established through the Office of the Vice President and Treasurer. The many other prizes and awards available to

GW students are funded annually, rather than by permanent endowment, and are listed in the annual commencement program when information is provided in time for publication.

Abdelfattah Abdalla Prize—Awarded annually to a junior or senior in the Department of Electrical and Computer Engineering for scholarship and service.

Norman B. Ames Memorial Prize—Awarded annually to a graduating senior in the School of Engineering and Applied Science who has made significant contributions to the School and the University.

Buka Family Prize—Provided by Ruth Buka in honor of her parents, Georg and Rosa Buka, and her sister, Hilde Buka-Lacour. It is awarded to the most outstanding student in German languages and literatures.

Byrne Thurtell Burns Memorial Prize—Awarded to the senior majoring in chemistry who shows the greatest proficiency in organic chemistry, as evidenced by a comprehensive examination, and who possesses such qualifications of mind and character as to give promise of future achievement.

Wilbur J. Carr Prize—Established in 1962 by Edith K. Carr, former Trustee of the University, in memory of her distinguished husband, who was graduated from the School of Comparative Jurisprudence and Diplomacy in 1899. It is awarded annually to that student in the graduating class of the University who has demonstrated outstanding ability in the study of international affairs and who has given evidence of possessing in marked degree the qualities that produce the good citizen and the dedicated public servant.

Astere E. Claeysens Prize—Established in 1981 by the Trustees of the Bess and Arthur Dick Family Foundation. It is awarded for the best original work in playwriting by a student enrolled in the University.

John Henry Cowles Prizes—Two prizes, established by John H. Cowles, Grand Commander of the Supreme Council of Thirty-third Degree (Mother Council of the World) of the Ancient and Accepted Scottish Rite of Freemasonry, Southern Jurisdiction of the United States of America. Awarded upon graduation to the graduate or undergraduate student with the best overall scholastic achievement and leadership potential in the School of Business and in the Elliott School of International Affairs.

DeWitt Clinton Croissant Prize—Awarded annually to the undergraduate student enrolled in a course in drama or active in University dramatics who submits to the English Department the best essay on drama or the theater.

E.K. Cutter Prize—Established by Marion Kendall Cutter “for excellence in the study of English.” Awarded to the member of the graduating class whose record in English, combined with general excellence, shows the most marked aptitude for and attainment in English studies.

Isaac Davis Prizes—Established in 1847 and awarded annually to the three seniors who have made the greatest progress in public speaking while enrolled in the University. Awards are determined by a public-speaking contest in which the participants deliver original orations. Only members of the senior class of Columbian College who are candidates for the degree of Bachelor of Arts or Bachelor of Science are eligible to compete.

Elton Prize—Established by the Reverend Romeo Elton, of Exeter, England, and awarded annually to the student with the highest average in the most advanced course in the Greek language and literature.

Jesse Frederick Essary Prize in Journalism—Established by Helen Essary Murphy and awarded annually to a student who has given promise of sound citizenship and who submits the

best printed and published evidence of ability in “forthright reporting” and good journalistic writing in a student publication or elsewhere.

Jessie Fant Evans Prize—A bequest of Joshua Evans, Jr., in 1971, in recognition of his wife’s distinguished record at and service to the University, on whose Board of Trustees she served as the first woman member. Awarded annually to an outstanding senior student in a contemporary history course.

Joshua Evans III Prize in Political and Social Science—A memorial prize “established by friends because of an outstanding life.” Awarded annually to that student in the graduating class “who has demonstrated his/her signal ability in the social and political sciences and who has given promise of the interpretation of that ability in good citizenship among his/her fellows.”

Willie E. Fitch Prize—Established by James E. Fitch in memory of his son. Awarded annually to a senior student for the best examination in chemistry.

Alfred Martin Freudenthal Prize—Awarded annually to the senior in the School of Engineering and Applied Science who graduates with the highest scholastic standing.

Goddard Prizes—A memorial established by Mary Williamson Goddard, Alice Douglas Goddard, and Frederick Joseph Goddard. Three prizes are awarded annually to junior or senior students earning the highest average in American literature; French language and literature; and business administration or accounting.

Harmon Choral Prize—Established in 1986 in memory of Dr. Robert H. Harmon, director of the Glee Club from 1924 to 1964, by his brother Bishop Nolan Harmon and the GW Department of Music. Awarded annually to one or two students who have made outstanding contributions to the choral programs.

Ching-Yao Hsieh Prize—Two prizes awarded annually, one to an undergraduate and one to a graduate student in the Department of Economics.

Gardiner G. Hubbard Memorial Prize in United States History—Established by Gertrude M. Hubbard in memory of her husband and awarded annually to that member of the graduating class majoring in history who has maintained the highest standing in courses in United States history.

Cecille R. Hunt Prize—Offered annually to deserving art students.

Korean Language and Culture Prize—Awarded annually to a student enrolled in a Korean language/culture course.

Minna Mirin Kullback Memorial Prize—Established in 1968 by Solomon Kullback in memory of his wife. Awarded annually by a committee of faculty members of the Department of Statistics to a full-time undergraduate or graduate student majoring in statistics, who will have completed 18 credit hours of statistics courses by the end of the spring semester.

John Francis Latimer Prize in Classics—Established in 1973. Awarded to a graduating senior who has made the most outstanding record as a major in the Department of Classics.

Martin Mahler Prize in Materials Testing—Awarded to the upper-division or graduate student in engineering who submits the best reports on tests in the materials laboratory course, with preference given to prestressed concrete tests.

Hilda Haves Manchester Prize in Sociology—Established in honor of Hilda Haves Manchester, B.A. 1932, an outstanding student whose major field was sociology. Awarded annually by Columbian College to the senior student majoring in sociology who has the highest scholastic record.

The Barry Manilow Endowed Prize in Music—Established in 1983. Awarded annually to a student majoring in music. The award is made on the basis of academic performance and musical ability, as determined by a committee of faculty appointed by the chair of the Music Department.

Vivian Nellis Memorial Prize—Awarded to a student in the English Department who has shown special promise in the field of creative writing.

Ruggles Prize—Established by Professor William Ruggles in 1859. Awarded annually to a candidate for a bachelor's degree for excellence in mathematics.

Howard C. Sacks Prize—Awarded to a student in political science who has demonstrated outstanding academic achievement in the study of Far Eastern affairs.

Hermann and Johanna Richter Schoenfeld Prize—Established in grateful appreciation of the inspired teaching and devotion to his students of Dr. Hermann Schoenfeld, who for more than 20 years until his death in 1926 headed the Department of German. Hermann Schoenfeld, Ph.D., LL.D., was widely recognized as a scholar of distinction whose presence on the faculty added prestige to the University. This prize is given annually to a member of the graduating class for excellence in historical and cultural phases of German studies.

Julian H. Singman Prizes—Two prizes awarded annually, one in design and one in aquarelle painting.

Sylvia S. Speck Prize—Awarded to a graduating senior for exemplary academic achievement in English literature.

Staughton Prize—Established by the Reverend Romeo Elton and awarded annually to the student making the best record in the most advanced courses in Latin language and literature.

Alfred E. Steck Memorial Prize—Awarded for proven excellence in the field of sculpture.

James MacBride Sterrett, Jr., Prize—Established in 1911 by Professor Sterrett in memory of his son. Awarded annually to the student who obtains the highest average in Physics 1 and 2.

Charles Clinton Swisher Historical Club Prize—Established in 1936 by the Charles Clinton Swisher Historical Club and augmented in 1941 by the bequest of Professor Swisher. Awarded annually to the student who submits the best essay covering some phase of medieval history.

Thomas F. Walsh Prize—Established in 1901 and awarded annually to the student who submits the best essay in Irish history.

Alexander Wilbourne Weddell Prize—Established in 1923 by Virginia Chase Weddell in memory of her husband. Awarded annually to a degree candidate who writes the best essay on “the promotion of peace among the nations of the world.” The prize essays shall become the property of the University and shall not be printed or published without the written consent of the University. The University reserves the right to withhold the award if no essay attaining the required degree of excellence is submitted.

GW Alumni Association

The objectives of this organization are to unite the graduates who wish to associate themselves for charitable, educational, literary, and scientific purposes, and to promote the general welfare of the University.

Membership in the Association is conveyed automatically to anyone who has been graduated from any school or division of the University. Anyone who has earned 15 credit hours or the equivalent at the University, who has left the University in good standing, and whose class has graduated is eligible for membership; in the case of the Office of University Students, however, only the “15 credit hours earned” requirement and not the “graduation of the class” requirement applies. Graduates of Center for Professional Development certificate programs are also eligible.

A Governing Board, composed of members representing the constituent alumni organizations, directs the activities of the Association. The voluntary leadership of the Association works closely with the staff of the Office of Alumni Relations in carrying out Association affairs. The Association may be contacted through the Office of Alumni Relations.

UNIVERSITY REGULATIONS

Students enrolled in the University are required to conform to the following regulations and to comply with the requirements and regulations of the school in which they are registered.

Students who withdraw or are suspended, or who, for any other reason, are not registered at the University for one semester or more, may reapply and, if readmitted, continue their program only under the regulations and requirements in force at the time of return.

If a student knowingly makes a false statement or conceals material information on an application for admission or any other University document, the student's registration may be canceled. If such falsification is discovered after the student has matriculated at the University, the student may be subject to dismissal from the University. Such a student will be ineligible (except by special action of the faculty) for subsequent registration in the University.

Registration

Information on registration procedures is stated on the Registrar's Office website and in the *Schedule of Classes*, which is available in advance of each semester.

Registration in courses is open only to those persons formally admitted to the University by the appropriate admitting office and to continuing students in good standing.

Students may not register concurrently in this University and another institution without the prior permission of the dean of the school in which they are registered in this University. With the exception of students enrolled in a joint degree program, registration in more than one school

of the University requires the written permission of the deans concerned, prior to registration.

Registration is not complete until all financial obligations have been met. Individuals without a valid registration may not attend class or earn any course credit.

Eligibility for Registration—Registration for the following categories of on-campus students is held on the days of registration published in the *Schedule of Classes*. A student who is suspended or whose record is encumbered for any reason is not eligible to register. Registration in a given course may be denied to nondegree students by the Office of University Students when space is needed for degree candidates.

New Student—Upon receipt of a letter of admission, the new student is eligible for registration on the stated days of registration. Registration for new students is typically conducted on stated days as part of the Colonial Inauguration orientation program.

Readmitted Student—A student previously registered in the University who was not registered during the preceding semester must apply for and be granted readmission by the appropriate admitting office before being eligible for registration.

Continuing Student—A student registered on campus in the immediately preceding semester or the summer session preceding the fall semester is eligible to register assuming good standing and enrollment in a continuing program.

Completion of Registration—Registration is not complete until financial obligations have been fulfilled. Students who do not complete their financial obligations in a timely manner may have their registration canceled and will not be permitted to attend class.

Registration for Consortium Courses—Degree students interested in taking courses at any of the other institutions in the Consortium of Universities of the Washington Metropolitan Area, Inc., should consult the program announcements of the other institutions. Consortium registration

forms and instructions may be picked up in the Office of the Registrar. In order to participate in the Consortium program, students must obtain the approval of an advisor and should ascertain from the department of the institution where the course is taught whether they are eligible for the course and whether there is space in the class. Specific inquiries should be addressed to the Registrar's Office. Detailed information concerning Consortium policy and procedures is printed in the *Schedule of Classes* and is available on the Registrar's Office website.

Adding and Dropping Courses

During the registration period (before the end of the second week of classes) students may add or drop courses using GWeb. After the second week of classes, students who wish to add or drop a course must complete a Registration Transaction Form and submit the form to the office of their dean; forms are available on line, at deans' offices, and in the Office of the Registrar. Adding a course after the second week requires a signature of the instructor or other authorized member of the department.

A course dropped during the first four weeks of classes will not appear on the student's transcript. A course dropped after the fourth week but before the end of the eighth week will be assigned a notation of *W* (Authorized Withdrawal).

The deadline for dropping a course without academic penalty is the end of the eighth week of classes in the fall and spring semesters. After the end of the eighth week of classes, dropping a course without academic penalty is only possible after the student presents a petition to the dean and receives written permission.

All charges for courses from which the student withdraws are subject to the refund policy listed under Fees and Financial Regulations in this Bulletin. Failure to withdraw by these procedures

can result in an extended financial obligation and the recording of a grade of *F* (Failure) or a notation of *Z* (Unauthorized Withdrawal).

Changes in Program of Study

Changes Within a School—A student may not substitute one course for another within an established program of study or change status from credit to audit or from audit to credit without the approval of the dean of the school in which he or she is registered. Change from one major field to another within the same school may be made with the approval of the dean.

Transfer Within the University—Application for transfer to another school must be made to the appropriate admitting office on the form provided by the office concerned. Students transferring within the University are advised to study carefully the requirements listed below under Graduation Requirements and to note that unless otherwise specified, in all undergraduate divisions, 30 credit hours, including at least 12 credit hours in the major field, must be completed while registered in the school from which the degree is sought. Upon transfer the student should consult the dean concerned and understand clearly the requirements that must be fulfilled. A maximum of 45 credit hours earned through the Office of University Students may be applied toward a bachelor's degree in the degree-granting schools of the University.

Grades

Grades are made available to students through the Office of the Registrar after the close of each semester. The following grading system is used: *A*, Excellent; *B*, Good; *C*, Satisfactory; *D*, Low Pass; *F*, Fail; other grades that may be assigned are *A-*, *B+*, *B-*, *C+*, *C-*, *D+*, and *D-*. Symbols that may appear include *AU*, Audit; *I*, Incomplete; *IPG*, In Progress; *W*, Authorized Withdrawal; *Z*, Unauthorized Withdrawal; *P*, Pass; *NP*, No Pass; *R*, Need to Repeat Course.

Except for courses that specifically state that repetition for credit is permitted, a candidate for a degree at this University may not repeat a course in which a grade of *D-* or better was received, unless required to do so by the department concerned. A written statement, indicating that the student is required to repeat the course, must be submitted to the student's dean by the appropriate department chair.

The symbol of *Z* is assigned when students are registered for a course that they have not attended or have attended only briefly, and in which they have done no graded work. At the end of the academic year, students' records are reviewed; if there is more than one *Z* per semester, a student's record will be encumbered until released by the student's advisor or academic dean. The symbol of *Z* is not a grade but an administrative notation.

Incompletes—The symbol *I* (Incomplete) indicates that a satisfactory explanation has been given the instructor for the student's inability to complete the required course work during the semester of enrollment. At the option of the instructor, the symbol *I* may be recorded if a student, for reasons beyond the student's control, is unable to complete the work of the course, and if the instructor is informed of, and approves, such reasons before the date when grades must be reported. This symbol may be used only if the student's prior performance and class attendance in the course have been satisfactory. Any failure to complete the work of a course that is not satisfactorily explained to the instructor before the date when grades must be turned in will be graded *F*, Failure. If acceptable reasons are later presented to the instructor, that instructor may initiate an appropriate grade change, which in all cases will include the symbol *I*. The course work must be completed within the designated time period agreed upon by the instructor and student, but (except in the School of Business) no more than one calendar year from the end of the semester in which the course was taken. In the School of Business, the symbol *I* must be

changed by a date agreed on by the instructor and the student, but no later than the last day of the examination period for the fall or spring semester immediately following the semester or summer session in which the symbol *I* is assigned. When work for the course is completed, the instructor will complete a grade change form and turn it in to the Office of the Registrar. The grade earned will be indicated in the form of *I*, followed by the grade. The indication of *I* cannot be removed and remains on the student's permanent academic record even after the course has been successfully completed. If work for the course is not completed within the designated time, the grade will be automatically converted to a grade of *IF*, Incomplete/Failure, 0 quality points, and the grade-point average and academic standing recalculated.

The Grade-Point Average—Scholarship is computed in terms of the grade-point average, obtained by dividing the number of quality points by the number of credit hours for which the student has registered, both based on his or her record in this University. The grade-point average is computed as follows: *A*, 4.0; *A*–, 3.7; *B*+, 3.3; *B*, 3.0; *B*–, 2.7; *C*+, 2.3; *C*, 2.0; *C*–, 1.7; *D*+, 1.3; *D*, 1.0; *D*–, .7; *F*, 0, for each credit hour for which the student has registered as a degree-seeking student. Although credit value for a course in which a grade of *F* is earned appears on the transcript for the purpose of calculating the grade-point average, no academic credit is awarded. In the case of a student who is allowed to repeat a course, the first grade received remains on the student's record and is included in the grade-point average. Courses marked *AU*, *CR*, *I*, *IPG*, *P*, *NP*, *R*, *W*, or *Z* are not considered in determining the average, except that courses marked *I* will be considered when a final grade is recorded. With the exception of Consortium courses, grades in courses taken at other institutions are not considered in computing the grade-point average.

Latin Honors

Bachelor's degrees with honors are awarded to students whose academic records give evidence of particular merit. The student's grade-point average determines the level of honors as follows: *cum laude*, 3.4–3.59; *magna cum laude*, 3.6–3.79; *summa cum laude*, 3.8–4.0. The grade-point average includes all course work completed at GW. To be eligible for an honors designation, a student must complete at least 60 hours of course work with letter grades (grades included in calculating the grade-point average) at GW.

The grade-point average is calculated by the Office of the Registrar, and the honors designation is entered on the transcript and diploma of those students who earn an honors designation. If Latin honors are entered in the commencement program, honors status will be determined on the basis of work completed by the end of the seventh term and entered only for those students who have completed seven-eighths of the credit hours required for the degree. Latin honors indicated on the diploma are calculated on the basis of all course work completed. The diploma and transcript are the official indication that a degree was conferred and Latin honors awarded.

Special Honors

Special Honors may be awarded by the faculty to any member of the graduating class for outstanding achievement in the student's major field on recommendation of the major department. The student must fulfill all of the following requirements: (1) Candidacy for Special Honors must be approved by the faculty member representing the major department or field not later than the beginning of the senior year. (2) Such other conditions as may be set at the time the candidacy is approved must be met. (3) At least one-half of the courses required for the degree must have been completed at GW. (4) The specific requirement of the school in which the student is registered must be fulfilled as follows: (a) Columbian College of Arts and Sciences—grades of *A* through *B–* in 50 percent of the courses taken at GW; (b) the School of Engineering

and Applied Science or the School of Business—a grade-point average of at least 3.0 on all course work taken at GW; (c) the Elliott School of International Affairs—a grade-point average of at least 3.4 on all course work taken at GW. Special honors awards appear on the transcript.

Graduation Requirements

Degrees are conferred in January, May, and August. To be eligible for graduation a student must have met the admission requirements of the school in which registered; completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree as stated in this bulletin; filed an application for graduation by the published deadline date; and be free from all indebtedness to the University. Enrollment is required for the semester or summer at the close of which the degree is to be conferred, and all degree requirements must be completed by the last day of final examinations for that semester or summer session. Students who pursue a double major across two schools must complete the primary major in their own school in order to graduate. A second major may supplement the primary major but may not substitute for it.

Participation in the Commencement Ceremony—Participation in the annual commencement ceremony held in May is open to students who have applied to graduate in the current spring semester or who graduated the preceding fall semester or summer session. Students, graduate or undergraduate, who need no more than 9 credit hours to complete their degree requirements, may participate in May commencement ceremonies if there is a reasonable expectation that they will be able to obtain the needed credits during the following summer. The maximum of 9 credit hours is firm and not subject to petition. Summer graduates who elect to attend the preceding May ceremony must apply for graduation no later than February 1. Students who apply after the published deadlines are not guaranteed commencement materials and may not be listed in the commencement program.

Continuous Enrollment Status

Once entered in a degree program, a student is expected to be continuously enrolled and actively engaged in fulfilling the requirements for the degree each semester of the academic year until such time as the degree is conferred. A student is considered to be continuously enrolled when registered for courses or when engaged in and appropriately registered for activities such as the following, with the prior approval of the school in which the student is enrolled: cooperative work semester; study abroad program; attendance at another institution with prior approval to have work transferred back to the GW program; completion of outstanding work in courses in which a grade of Incomplete or In Progress was received (at the undergraduate level); or non-course instructional activities unique to the particular school. This status is generally limited to one year. Should the student break continuous enrollment at the University and not request and be granted a leave of absence (see below), he or she must apply for readmission and, if granted, be subject to the requirements and regulations then in force.

Leave of Absence

Should a degree student find it necessary to interrupt active pursuit of the degree, he or she may petition the dean for a leave of absence for a specific period of time, generally limited to one calendar year. A degree student who discontinues active enrollment in degree studies without being granted a leave of absence, or a student granted a leave who does not return to active study at the close of the period of approved absence, must apply for readmission and be subject to the regulations and requirements then in force. The right to use of University facilities is suspended while the leave is in effect.

Policy Regarding Students Called to Active Military Duty

Any student who is a member of a military reserve unit or the National Guard and is activated or called to active duty early in a semester or summer session automatically will be entitled to a full refund of all tuition and fees that he or she has paid toward the expenses of that academic term. If the notification of the call to active duty comes after the mid-term examinations or after other substantial graded work has been completed, the student will have the option of either taking a full refund of tuition and fees or taking an Incomplete in his or her courses with the privilege of returning to complete all required course work at some future date without payment of any further tuition and fee charges. It is the responsibility of the student to present evidence of his or her activation to the Office of Student Accounts and to request the appropriate refund.

Should a degree student called up for active duty find it necessary to interrupt active pursuit of the degree, he or she may petition the dean for a leave of absence for a specified period of time, generally limited to one calendar year. Deans are encouraged to grant any request to extend the leave of absence for longer than the customary period should military service require an absence of more than one year.

All students on active duty will be automatically exempted from the request for a \$50 voluntary library contribution without requiring any communication from them or their initials on the bill.

Complete Withdrawal From the University

A degree-seeking student who wishes to withdraw from all courses during a given semester must complete a Complete Withdrawal Form and submit it to the Office of the Registrar. Forms are available on line, at deans' offices, and in the Office of the Registrar. The deadline for complete withdrawal from all courses without academic penalty is the end of the ninth week of classes. Complete withdrawal after the ninth week requires a petition to the dean.

All charges for courses from which the student withdraws are subject to the refund policy listed under Fees and Financial Regulations in this Bulletin. Failure to complete a Complete Withdrawal Form can result in an extended financial obligation and the recording of grades of *F* (Failure) or notations of *Z* (Unauthorized Withdrawal).

University Policies and Definitions

University Policy on Equal Opportunity—The George Washington University does not unlawfully discriminate against any person on the basis of race, color, religion, sex, national origin, age, disability, veteran status, or sexual orientation. This policy covers all programs, services, policies, and procedures of the University, including admission to educational programs and employment. The University is also subject to the District of Columbia Human Rights Law.

Inquiries concerning the application of this policy and federal laws and regulations regarding discrimination in education or employment programs and activities may be addressed to Susan B. Kaplan, Associate Vice President for Human Resources, The George Washington University, Washington, D.C. 20052, (202)994-4433, or to the Assistant Secretary for Civil Rights of the U.S. Department of Education.

Academic Integrity—The University community, in order to fulfill its purposes, must establish and maintain guidelines of academic behavior. All members of the community are expected to exhibit honesty and competence in their academic work. Incoming students have a special responsibility to acquaint themselves with, and make use of, all proper procedures for doing research, writing papers, and taking examinations. Members of the community will be presumed to be familiar with the proper academic procedures and held responsible for applying them. Deliberate failure to act in accordance with such procedures will be considered academic dishonesty. Acts of academic dishonesty are a legal, moral, and intellectual offense against the

community and will be prosecuted through the proper University channels. Copies of the University Code of Academic Integrity can be obtained from the following officers: all department chairs, all academic deans, the Registrar, and the Vice President for Academic Affairs.

Patent and Copyright Policies—Students who produce creative works or make scientific discoveries while employed or supported by the University or through substantial use of University resources are subject to the University's patent and copyright policies (see <http://www.gwu.edu/~research/policies.htm> under Intellectual Property).

Human Research Requirements—Students who are planning to conduct research involving the use of human subjects (for a thesis, dissertation, journal article, poster session, etc.) must obtain Institutional Review Board (IRB) approval before collecting any data. In order to receive this approval, contact the Office of Human Research (Ross Hall, Suite 712, 202-994-2715, or see www.gwumc.edu/research/human.htm) to submit the study for the approval process.

The Library—All students registered in the University have the privilege of using the University's Gelman Library. Its stacks are open, and all students are welcome to browse. Authorized GW identification is needed to enter the library and to borrow books. Any book that circulates is subject to recall by the library if needed for reserve or requested by another user after a minimum of 20 days. Reserve books must be used in the library, except that they may be withdrawn for overnight use two hours before closing time. Transcripts of grades are withheld until a student's library record is clear, with all borrowed books returned and any fines paid. All students using the University's Gelman Library are expected to be familiar with its detailed regulations, available at any of the library's service desks.

Use of Correct English—A report regarding any student whose written or spoken English in any course is unsatisfactory may be sent by the instructor to the dean of the school, who may assign supplementary work, without academic credit, varying with the needs of the student. If the work prescribed is equivalent to a course, the regular tuition fee is charged. The granting of a degree may be delayed for failure to make up any such deficiency in English to the satisfaction of the dean.

Name of Record—A student's name of record includes the first name, middle initial or full middle name, and the family name. Nicknames may not be used. The University will change the name of a currently enrolled student on its official records but will require satisfactory evidence of a legal basis for the change. The diploma is awarded under the official name of record at the time of graduation.

Student Status—For the purpose of defining student status, undergraduates taking 12 or more credit hours per semester (6 credits in the summer) are considered to be full time, those taking 6 to 11 credits per semester are considered to be half time, and all others are considered to be part time.

Generally, a student becomes a sophomore upon completion of 30 credit hours, a junior upon completion of 60 credit hours, and a senior upon completion of 90 credit hours.

Attendance—Students may attend only those classes for which they are officially registered. Regular attendance is expected. Students may be dropped from any course for undue absence. A student suspended for any cause may not attend classes during the period of suspension. Students are held responsible for all of the work of the courses in which they are registered, and all absences must be excused by the instructor before provision is made to make up the work missed.

Credit—Credit is given only after completion of registration in a course and satisfactory completion of the required work, or upon the assignment of advanced standing in accordance with the regulations of the school concerned. Credit that has been applied to the completion of a degree may not subsequently be applied to another degree.

Auditing—A person who has been admitted to the University may be registered, with the permission of the instructor, as an auditor in a class (no academic credit). An auditor is not required to take active part or to pass examinations. A student who takes a course as an auditor may not repeat it later for credit. Tuition is charged at the prevailing rate. Under no circumstance may a student change from audit status to credit status or vice versa after the end of the eighth week of classes.

Post-Admission Transfer Credit—Students who plan to attend another institution and apply credit so earned toward graduation from this University must first secure the written approval of their dean. In no event will credit in excess of what might be earned in a similar period in this University be recognized.

Transcripts of Record—Official transcripts of student records are issued upon written request of the student or former student who has paid all charges, including any student loan installments, due the University at the time of the request. A nominal fee is charged for each official transcript. Unofficial copies of transcripts are available to students, by written request, at a nominal fee. Partial transcripts are not issued. Students have access to their unofficial student record through the GWeb Information System.

Student Conduct—All students, upon enrolling and while attending The George Washington University, are subject to the provisions of the *Guide to Student Rights and Responsibilities*, which outlines student freedoms and responsibilities of conduct, including the Code of Student

Conduct, and other policies and regulations as adopted and promulgated by appropriate University authorities. Copies of these documents may be obtained from the Office of the Dean of Students or from the offices of the academic deans. Sanctions for violation of these regulations may include permanent expulsion from the University, which may make enrollment in another college or university difficult. Regulations or requirements applicable only to a particular program, facility, or class of students may not be published generally, but such regulations or requirements shall be published in a manner reasonably calculated to inform affected students.

Right to Dismiss Students—The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable.

Right to Change Rules and Programs—The University reserves the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine. The right is reserved by the University to make changes in programs without notice whenever circumstances warrant such changes.

University Policy on the Release of Student Information—The Family Educational Rights and Privacy Act (FERPA) applies to institutional policies governing access to and release of student education records.

The University may release the following directory information upon request: name, local address including e-mail, and telephone number; name and address of emergency contact; dates of attendance; school of enrollment; field of study; enrollment status; credit hours earned; degrees earned; honors received; participation in University-recognized organizations and activities (including intercollegiate athletics); and height, weight, and age of members of athletic

teams, as well as likenesses used in University publications. A student who does not wish such directory information released must file written notice to this effect in the Office of the Registrar.

The University's full policy statement on the release of student information is published in the *Guide to Student Rights and Responsibilities*, available in the Office of the Dean of Students or the offices of the academic deans. The full statement also appears in the *Schedule of Classes* and on the Registrar's Office website.

Student Identification Number/Social Security Number—The George Washington University is in process of converting from use of the Social Security Number (SSN) to identify records pertaining to individual students, although the SSN is still needed to identify the student for purposes of financial aid eligibility and disbursement and repayment of financial aid and other debts payable to the University. The SSN is required when applying for financial aid. The Internal Revenue Service requires the University to file information that includes a student's SSN and other information such as the amount paid for qualified tuition, related expenses, and interest on educational loans. This information is used to help determine whether a student, or a person claiming a student as a dependent, may take credit or deduction to reduce federal and/or state income taxes. Many efforts are made to protect the privacy of this number, and a student may request an alternate personal identifier. Further information may be obtained by contacting the Office of the Registrar.

Property Responsibility—The University is not responsible for the loss of personal property. A Lost and Found Office is maintained on campus in the University Police Department.

The Schools

COLUMBIAN COLLEGE OF ARTS AND SCIENCES

Dean W.J. Frawley

Associate Deans P.B. Duff, D.L. Lipscomb, M. Moses

Assistant Deans K.Z. Keller, N. Mikhalevsky

Since its founding in 1821, Columbian College, the original college of liberal arts and sciences of The George Washington University, has been the cornerstone of the campus community.

Columbian College of Arts and Sciences today houses all undergraduate and graduate programs in the arts and sciences, offering bachelor's, master's, and doctoral degrees.

The rich and diverse arts and sciences curriculum is designed to strengthen the student's ability to analyze the social, cultural, and physical environment and to communicate findings in an articulate fashion. These purposes are accomplished by means of the study of various disciplines within the humanities, the social sciences, and the mathematical and natural sciences. Students may elect one of 50 departmental or interdisciplinary majors; they may also elect double majors or individualized degree programs. Dean's Seminars constitute a set of courses available only to first-year Columbian College students; the seminars offer a focused introduction to issues of particular significance.

The College offers its undergraduates opportunities for pre-professional education in many fields and for internships in a stimulating urban environment. Special curricular guidance is given to students planning to apply to a medical or law school.

The Bachelor's Degrees

Columbian College offers undergraduate programs leading to the degrees of Bachelor of Arts, Bachelor of Science, and Bachelor of Fine Arts. In cooperation with the School of Medicine and

Health Sciences, a seven-year integrated Bachelor of Arts/Doctor of Medicine is offered, and in cooperation with the Law School, a six-year Bachelor of Arts/Juris Doctor is offered.

One hundred twenty hours of course work must be passed and a grade-point average of at least 2.0 maintained. Note that some courses outside Columbian College (notably exercise and sport activities courses) do not count toward the 120-credit requirement. General curriculum, major, and other requirements described below must be met.

Each student must declare a major during the sophomore year. A student will normally declare a major in the third full-time semester but not later than the registration period during the fourth full-time semester or the semester following completion of 45 credit hours, whichever comes first. A student may change the major with the consent of the dean and of the department or committee concerned; the student must meet the requirements for the new major in effect at the time the change is approved. At least 60 hours of course work must be taken outside the major-field department or major program. (This does not apply to the Bachelor of Fine Arts curriculum.)

See Scholarship Requirements under University Regulations for an explanation of how the grade-point average is computed. See Scholarship Performance in the Major, below, for requirements applicable specifically to major programs.

All students, including those transferring from other institutions or from another school or division of this University, with major requirements wholly or substantially met, must satisfy the residence requirement of Columbian College stated below.

Residence

Students must complete 45 of the final 60 hours toward the degree in residence in the Columbian College, including at least 12 hours of course work at the 100 level in the major field. (Students

who study abroad must complete 45 of their final 75 hours in residence.) Nine of the final 15 hours must be completed in residence. Courses applicable to the degree taken while registered in any division of The George Washington University in the semester or summer sessions immediately prior to admission to degree candidacy in Columbian College are counted as courses in residence.

Advising

Students have the responsibility for determining their schedules and meeting degree requirements. Because faculty and staff advisors can help students learn to make well-informed choices, students are required to meet with an advisor prior to registering each semester. A CCAS advising hold prevents registration until students have consulted with their advisors.

Freshmen entering Columbian College participate in an advising system designed to provide students ready access to a knowledgeable member of the faculty. All freshmen register for CCAS 10, Proseminar for Scholarship and Advising; each section of the course is led by a faculty member who serves as the academic advisor until the student declares a major. The proseminar is required for all new freshmen; it will be graded, but only with the grades of *P* or *NP*; the course does not count toward the 120 credits required for the B.A., B.F.A., or B.S.

Once students declare their major, they are advised by the faculty of their major department. Transfer students without declared majors are advised in the College's Office of Undergraduate Studies, while those with majors are advised by their major department. Professional advisors are available year-round in the Office of Undergraduate Studies for academic assistance and for an accurate appraisal of procedural issues that may arise in any student's program of study.

Specialized advising for students interested in health professions or law is also provided in the College's Office of Undergraduate Studies.

Personal counseling is available through the office of the Dean of Students, the Counseling Center, Disability Support Services, the Multicultural Office of Undergraduate Studies, and the International Services Office.

Students concerned about their academic performance should see their professors, their proseminar advisor, or a professional advisor in the College's Office of Undergraduate Studies. First-year students who receive any grade of *C-* or lower in the first eight weeks must meet with their proseminar advisor to review their academic progress. The Writing Center in the English Department offers walk-in and by-appointment assistance; peer tutors and study skills workshops are available through the Counseling Center.

Academic Work Load

To encourage academic performance of high quality, the College limits the student's work load. After the freshman year, a full-time student who is not on probation may take a course load of up to 18 credit hours. The 18th and all subsequent hours require additional tuition charges. A full-time student who, during the immediately preceding semester, has received no grades below *B-* and has earned grades of *A* or *A-* in three courses totaling at least 9 credit hours may take 21 credits. Under no circumstances may students register for more than 21 credits. Students registered for 12 to 15 credits should be employed for no more than 20 hours per week. The number of credits students on probation may take is determined by the Committee on Undergraduate Studies.

Academic Standing

A student who is not suspended or on probation is considered to be in good standing.

The following rules governing probation and suspension are applicable to students enrolled for a full-time program (12 credit hours or more) during the fall or spring semester. Students

enrolled for fewer than 12 credit hours during the fall or spring semester and students enrolled during the summer sessions are subject to probation or suspension on the basis of their cumulative record, a “semester” considered as the time interval in which at least 12 credit hours have accrued.

Probation—A student whose cumulative grade-point average is below 2.0 but above 1.0 after attempting a minimum of 24 credit hours is placed on probation. The course load of a student on probation may be no more than 13 credit hours. A student returns to good standing if, after a first or second semester on probation, the grade-point average is raised to 2.0 or more. A student still on probation after two semesters (or 24 additional credit hours attempted) ordinarily will be suspended but may be continued on probation by the Committee on Undergraduate Studies (see below).

Suspension—The following circumstances constitute grounds for suspension: (1) a cumulative grade-point average below 1.0 after attempting a minimum of 24 credit hours; (2) failure to attain a cumulative grade-point average of 2.0 or more after two successive full-time semesters (or 24 additional credit hours attempted) on probation. The Committee on Undergraduate Studies may continue a student on probation (in lieu of suspension) if satisfactory progress is demonstrated during the probationary period and sufficient evidence of academic promise, by way of a statement of appeal, is offered by the student.

Once suspended, students may not register for or complete any courses at The George Washington University. Suspended students may apply for readmission following completion of the term of suspension. Final dates for applying for readmission are the same as those governing undergraduate admission (see Admissions). A suspended student seeking readmission must submit evidence to the Committee on Undergraduate Studies of conduct during absence from the

University that indicates that the student will profit from readmission. A student suspended twice for poor scholarship will not be readmitted.

Semester Warning—A student whose cumulative grade-point average is less than 2.0 after attempting a minimum of 12 credit hours will be issued a warning notice at the end of the semester and will be required to take corrective measures (e.g., limitation of course load to no more than 13 credit hours).

Mid-semester Warning—When, at the end of the eighth week of each semester, instructors submit to the Office of Undergraduate Studies names of freshmen who are doing unsatisfactory work, a notice of warning is sent to the student and a copy filed with the appropriate advisor. A warning constitutes notice to the student to consult the instructor and advisor at the earliest opportunity.

Timely Progress Toward the Degree

Students who fail to make adequate and timely progress toward the degree, through repeated leaves or repeated failure to complete an appropriate number of credits per semester, may be dismissed from the University (see Right to Dismiss Students under University Regulations). Students dismissed on these grounds may apply for readmission after supplying sufficient evidence of academic promise.

Dean's List and Dean's Commendation List

The name of any student who completes 15 credit hours or more of graded course work in any one semester and attains a semester grade-point average of 3.5 or more with no grades below *B-* will be placed on the Dean's List for that semester. A course taken on a Pass/No Pass basis beyond the 15-hour minimum does not affect the student's eligibility for the Dean's List, nor are

the credit hours of such a course computed in the above figures. However, a grade of No Pass in a credit-bearing course disqualifies the student from the Dean's List.

The name of any part-time student who achieves a cumulative grade-point average of 3.5 or more upon completion of 30, 60, and 90 credit hours and upon graduation will be placed on the Dean's Commendation List.

Incompletes

Conditions under which the symbol *I* (Incomplete) may be assigned are described under University Regulations. In Columbian College, the conditions for granting a notation of *I* should be documented by a written contract between the faculty member and the student. Contracts must be on official Columbian College forms and a copy must be on file in the departmental office.

Changing an Incomplete—Incomplete work must be completed as specified in the contract but no later than one calendar year from the last day of the examination period of the semester or summer session in which the symbol *I* was assigned. In cases of well-documented extenuating circumstances, an instructor and a student may jointly petition the dean for additional time in which to complete the work of the course. Such petitions should be submitted within a year of the assignment of the symbol *I*. When work for the course is completed, the grade earned will be indicated in the form of *I*, followed by the grade. The indication of *I* cannot be removed from the transcript. An Incomplete that is not changed within this period automatically becomes an *IF*. The symbol *I* cannot be changed by reregistering for the course here or by taking its equivalent elsewhere.

Pass/No Pass Option

A junior or senior student in Columbian College who is in good standing may, with the approval of the advisor and the dean, take one course a semester for a grade of *P*, Pass, or *NP*, No Pass.

No student will be allowed to take more than four pass/no pass courses under this regulation. The student may, however, also receive grades of *P/NP* in proseminars for certain majors and in other courses in which these grades are assigned. Courses required for the College's general curriculum requirements or in the student's major or minor field (including those courses required for the major that are offered by other departments) may not be taken on the pass/no pass basis. A transfer student may not choose this option until the second semester of enrollment in this University. Under no circumstances may a student change from pass/no pass status to graded status, or vice versa, after the end of the eighth week of class.

Earning an Additional Hour of Credit

In exceptional circumstances and with the prior approval in writing of the instructor and the dean, a student may register for and earn an additional hour of credit in certain appropriate 100-level courses within the College by doing a significant amount of extra work as assigned and supervised by the instructor.

Tutorial Study

A junior or senior of demonstrated capacity, with a special interest in the subject matter of a regularly listed course, may be permitted to take tutorial study in residence under the personal direction of the instructor, in accordance with the rules of the appropriate department and with the approval of the dean. Credit under this plan is limited to the specific hours of credit designated for each course in the list of courses of instruction. It assumes frequent and regular conferences between the student and instructor.

Service–Learning Program

A maximum of 6 credit hours in the Service–Learning Program course may be credited toward bachelor’s degrees in Columbian College. Students must have a GPA of 3.0 or higher and may not take this course until completion of the freshman year. Students must meet with the SLP coordinator in the Office of Undergraduate Studies to review policy and procedures and the nature of their specific proposal.

Courses Outside Columbian College

No more than 18 credit hours of courses in schools of the University other than Columbian College may count toward the 120 credits required for graduation with a bachelor’s degree in Columbian College. Pursuing a secondary field may increase the 18-hour limit, with prior permission of the dean of Columbian College. No credit toward the degree is allowed for exercise and sport activities courses. No more than 45 credit hours of courses completed by a student while in nondegree status in the Office of University Students may be applied toward a degree in Columbian College.

Naval Science—For information on naval science courses and the Naval Reserve Officers Training Corps, see Naval Science, under Courses of Instruction. Note that not all Naval Science courses count toward the 120 credit hours required for the degree in Columbian College.

Placement, Waiver, and Credit Examinations

Preliminary Placement Examinations

All foreign language departments require students to take placement tests to determine the level of proficiency or eligibility for languages studied in high school. The student is placed in an appropriate course on the basis of these tests. Students may not register for a course other than that determined by the placement test without written permission of the language department.

There is no charge to the student for placement tests, and no credit (advanced standing) is awarded for courses bypassed or waived as a result of these tests.

Students who wish to register in Math 20, 31, or 51 are required, prior to registration, to take a placement examination or to have achieved indicated scores on the SAT II in mathematics.

Earning Credit by Examination

Assuming there is no duplication of course credit earned, a maximum of 30 credit hours may be assigned for any combination of the following:

College Board Advanced Placement Tests—See Admissions. Credit may be granted for college-level courses taken in an approved secondary school if substantiated by satisfactory performance on the Advanced Placement Tests.

College Board College-Level Examination Program (CLEP)—See Admissions.

Special Departmental Examinations—A student may request any department of Columbian College to offer a special examination covering the subject matter of any specific course. The student must offer evidence of sufficient background to have a reasonable command of the subject matter. Departments reserve the right to deny such requests. Assigning credit by special departmental examinations will depend on the department's evaluation of the examination paper. These examinations will normally be of at least three hours' duration. A fee is charged for preparation, administration, and grading of each course examination. Credit by special departmental examination is not permitted for the first two years of college-level courses in a native language other than English. A student who has previously taken examinations to waive course requirements may not subsequently take examinations for credit in the same courses.

Waiving Introductory Courses by Examination

Some departments in Columbian College offer periodic waiver examinations for introductory courses. Such examinations may be attempted at the option of the student; a fee is charged. Specific departments should be consulted for further details. Passing a waiver examination does not entitle a student to any credit toward the degree.

General Curriculum Requirements

With the exception of entering students in the College's School of Media and Public Affairs, all candidates for the degree of Bachelor of Arts or Bachelor of Science are admitted to a general arts and sciences curriculum until they declare a major field.

General curriculum requirements are established by the Arts and Sciences faculty as a whole and administered through its elected committees. Students must demonstrate that they have acquired familiarity with the breadth and diversity of the arts and sciences. Students will typically fulfill these requirements by taking the required number of GW courses in seven categories. Excluding the University Writing and Writing in the Discipline courses (see below), students may also fulfill these requirements in the following ways: (1) transfer credit for equivalent courses from an accredited institution; (2) credit earned by means of AP, IB, or other nationally approved examination programs; (3) waiver examinations such as SAT II or ACT subject tests. (See Advanced Standing and Advanced Placement under Admissions in this Bulletin, and note that waiver exams do not satisfy the Foreign Languages and Cultures requirement.) The seven categories are listed below. Excluding courses designated Writing in the Discipline, no course may fulfill a requirement in more than one of the seven categories. The description of each category includes a rationale. The Office of Undergraduate Studies maintains a list of courses appropriate for freshmen.

1. Literacy

Students take University Writing 20 (4 hours) in their freshman year plus two courses designated as Writing in the Discipline (6 hours) before graduation, preferably in their sophomore or junior years. Students may not take two Writing in the Discipline courses in the same semester to fulfill this requirement. For the academic world and beyond, students develop their ability to write effectively and to read analytically.

2. Quantitative and Logical Reasoning

Students must take two courses (6 hours) from the fields of mathematics, logic, or statistics. (Note that Math 3 and 6 are considered remedial and do not satisfy this requirement. Two statistics courses or two mathematics courses that are related in subject matter may not be taken; see the notes preceding the course lists under Statistics and under Mathematics in the Courses of Instruction section of this Bulletin.) Argumentation and quantitative evidence play important roles in social discourse. Students enhance their capacity to think logically and critically and to reason symbolically or with numerical data.

3. Natural Sciences

Students must take three courses with laboratories (9–12 hours) in at least two of the following fields: biology (including biological anthropology), chemistry, earth and environmental sciences, and physics (including astronomy). The health, security, and economic well-being of our society are linked to a scientifically literate citizenry. Students explore the fundamental principles of the natural world and see how the tools of science—careful observation and experimentation—not only help develop technology but also lead to a deeper understanding of the universe.

4. Social and Behavioral Sciences

Students must take two courses (6 hours) in one or more of the following fields: anthropology (except biological anthropology), communication, economics, geography, linguistics, media and

public affairs, political science, psychology, speech and hearing science, and sociology (including human services). Structures and processes in society and personality shape public events and the behavior of individuals and groups. Students explore empirical results in the literature and the implications of these results for social and behavioral issues, thereby gaining an appreciation for theory and methods of analysis, evidence, and proof.

5. Creative and Performing Arts

Students must take 3 credits in one of the following fields: fine arts, creative writing, dance performance, applied music (jazz performance, a single instrument, or a single ensemble), and theatre performance. Imagination and its expression play an important part in the cultural life of a society. Through courses that require participation in a creative or performing art, students gain insight into the interactions among materials, talent, and imagination, and develop sensitivity to the diverse elements involved in the arts.

6. Humanities

Students must take four courses (12 hours) in at least two of the following fields: American studies, classical studies, literatures in English, foreign literatures in their original language and in translation, history (including the history and appreciation of art, dance, music, film, and theatre), humanities, philosophy (except logic), religion, and women's studies. The humanities express the ideas, aspirations, and values of individuals and the societies in which they live. Through courses in the humanities, students experience the richness of ideas, traditions, and stories that have shaped the world.

7. Foreign Languages and Cultures

Students must take two courses (6–8 hours) in one language other than English, beginning at the level at which they place, or students must take two courses (6–8 hours) in aspects of foreign,

non-English speaking cultures from the fields of anthropology, art history, classical and Semitic languages and literatures, East Asian languages and literatures, German and Slavic languages and literatures, geography, history, humanities, international affairs, music, political science, religion, and women's studies. In our increasingly multicultural society, familiarity with a second language or another culture is important to understanding ourselves in relation to the world. Students must study a second language or other cultures in order to help develop this understanding, to facilitate communication across cultural and national boundaries, and to gain an appreciation for cultural diversity. For those who choose the foreign cultures option, courses must be selected from the following: Anth 170 to 175, 177 to 179, 185, 186, 188; Clas 71, 72, 81, 82, 100, 101, 117 to 120; Chin 111, 112; Chin/WStu 136; Japn 111, 112, 162; Kor 111, 112, 162; EALL 75; EALL/Rel 182 to 186; AH 101, 102, 103, 104, 106, 120, 121, 131, 132, 134, 135, 160, 190, 191; Geog 154, 161, 164, 165; Ger 91, 92, 161, 162, 165; Slav 91, 92, 151, 152, 161, 162, 165, 166, 185, 186; Hist 107 to 115, 118, 131, 132, 141 to 146, 148, 149, 158, 159, 161 to 165, 187, 189, 190, 193 to 196; Mus 7; PSc 130, 131, 170, 173, 176, 177, 179 to 181, 183; Rel 106, 107, 112, 113, 115, 156 to 161, 163 to 165, 771. The Office of Undergraduate Studies periodically updates the list of approved courses.

The Major

In order to declare a major, all students must receive academic guidance from a faculty advisor in the major department and submit a Declaration of Major form, signed by the major advisor, to the Office of Undergraduate Studies. The Declaration of Major form must be submitted no later than the registration period during the student's fourth full-time semester or the semester following the completion of 45 credit hours (whichever comes first). No student is considered to have declared a major until this process is completed. Thereafter, the student receives academic

guidance from a faculty advisor in the major department. In most cases, filing of the approved declaration form assures the student of admission to the major declared; however, if space, equipment, or other requirements compel a department or major program to limit the number of students in that major, admission to the major may be on a selective or space-available basis. Majors with selective admission are communication, journalism and mass communication, political communication, and English and creative writing. Once students declare their major, they must receive academic guidance from a faculty advisor in the major department in order to register for all subsequent semesters.

A change in degree candidacy within Columbian College (e.g., from Bachelor of Arts to Bachelor of Science) requires the permission of the dean. The degree requirements effective at the time the change is approved must be met.

Major Fields

All fields listed below (except Applied Mathematics, Biological Anthropology, Biophysics, Environmental Science, and Statistics) may lead to the Bachelor of Arts degree; a Bachelor of Science degree may be elected in those fields indicated by an asterisk.

American Studies

Anthropology

*Applied Mathematics

Archaeology

Art History

Art History and Fine Arts

*Biological Anthropology

*Biology

*Biophysics

*Chemistry

Chinese Language and Literature

Classical Humanities

Communication

Criminal Justice

Dance

Dramatic Literature

Early Modern European Studies

*Economics

English

English and Creative Writing

*Environmental Science

Environmental Studies

Fine Arts

French Language and Literature

Geography

*Geoscience

German Language and Literature

Hispanic Languages and Literatures

History

Human Services

Japanese Language and Literature

Journalism and Mass Communication

Judaic Studies

Mathematics

Music

Philosophy

*Physics

Political Communication

Political Science

Program in the Liberal Arts

Psychology

Religion

Russian Language and Literature

Sociology

Speech and Hearing Science

*Statistics

Theatre

Women's Studies

Scholarship Performance in the Major

Majors are defined in terms of credit hours, required courses, and the attainment of grades no lower than *C-* in the minimum number of 100-level courses required in the major field. If a student receives a grade of *D+*, *D*, or *D-* in a 100-level course specifically required in the major, the major department or program may permit the course to satisfy a curricular requirement even though it would not normally count toward the minimum number of hours required for the major.

However, the department or program may instead require the student to repeat the course until a satisfactory grade (C– or better) is earned. (The department chair or program director must authorize such repetition in a memo to the Office of Undergraduate Studies before the student may register a second time.) Once the student has completed the course with a satisfactory grade, credit hours earned the first time the course was taken will count toward the minimum number of hours required in the major. Credit earned for the repetition will not count toward the degree. The minimum specific requirements for majors are listed under the department concerned in Courses of Instruction. The chair of the department, or designated departmental advisor, should be consulted before registration concerning the student's program of courses; the entire program, including electives, must be approved by the department. The student is also expected to consult a departmental advisor in all matters affecting the program of studies, such as changes, substitutions, withdrawals, or transfer of credit from other institutions.

Some majors require satisfactory completion of entry, proficiency, or concluding examinations in addition to courses.

Double Majors

A student who completes the requirements of two major fields in Columbian College (for example, mathematics and physics, or history and economics) may graduate with a double major. Such a student should consult with advisors in the two departments concerned and officially declare both majors on the Declaration of Major form available in the Office of Undergraduate Studies. A Columbian College student may pursue two majors at the same time, even though one is toward a B.A. and the other is toward a B.S. A major field in Columbian College cannot be combined with a major field offered by another degree-granting unit of the University, with the

exception of the Elliott School of International Affairs and the School of Engineering and Applied Science.

A Columbian College student (whether in a B.A. or B.S. program) may pursue a second major in the Elliott School of International Affairs or the School of Engineering and Applied Science, provided that permission to do so has been obtained from the appropriate administrative office of the Elliott School or SEAS. Students in the Elliott School or SEAS may also take a second major (excluding majors in communication, journalism and mass communication, political communication, and English and creative writing) in Columbian College; students in the Elliott School may pursue a B.A. major in Columbian College, while students in SEAS may pursue either a B.A. or B.S. major in Columbian College.

Students wishing to pursue one of these options must request approval through the appropriate department and the Columbian College's Office of Undergraduate Studies. In all cases, students must complete the major in their own school in order to graduate. A second major in the Elliott School or SEAS may supplement the Columbian College major but may not substitute for it.

Interdisciplinary Programs

Special Interdisciplinary Programs—A student may propose a special interdisciplinary major program, in consultation with appropriate academic advisors. The proposed program must have valid and clearly defined academic goals to be considered for approval. Only students with a *B* average or better are eligible to propose a special interdisciplinary program. The proposal must be submitted for approval by the end of the fourth semester or the semester following completion of 45 credit hours (whichever comes first).

Approval of the proposed program rests with the Committee on Undergraduate Studies, which must also approve the proposed name of the program and the composition of the committee that

will oversee it. At least 45 credit hours of the program must be completed in Columbian College. Because of the broad scope of an interdisciplinary program, it may not be part of a double major.

At the discretion of the committee overseeing the program, the student must either write an acceptable senior thesis or pass a comprehensive examination in the last semester of study toward the degree.

Program in the Liberal Arts—This program is designed to provide a general education in the liberal arts, with or without another major, as the student chooses. It offers opportunity for achieving a substantial acquaintance with each of the three divisions of knowledge through a selection of courses that cultivate a broad perspective in the fundamental divisions of the arts and sciences. For curriculum requirements, see Liberal Arts, under Courses of Instruction.

Minors and Secondary Fields

Minors

Students who wish to familiarize themselves with a field outside their major may graduate with a minor in addition to the major. Not all Columbian College departments offer undergraduate minors; the requirements prescribed by those that do are listed under the department concerned. A student interested in a minor should consult a faculty advisor in the department concerned and declare both major and minor programs on the Declaration of Major form available in the Office of Undergraduate Studies.

At least one-half of the course work required for a minor must be done in residence. Grades of C- or better must be earned in 100-level courses, including such courses transferred as advanced standing from another institution. Courses passed with a grade below C- may be used to fulfill a minor field curricular requirement but may not be counted toward the total number of credit hours required for the minor.

When taken by a student enrolled at the University in a school other than Columbian College, such minors are designated secondary fields. The same curricular and scholarship requirements apply to secondary fields as to minors.

Undergraduates in other schools of the University may pursue major requirements to earn a secondary field when there is no appropriate minor.

Minors are available in the following fields:

Africana Studies

American Studies

Applied Ethics

Archaeology

Art History

Art History and Fine Arts

Biological Anthropology

Biology

Chemistry

Chinese Language and Literature

Classical Humanities

Communication

Creative Writing

Criminal Justice

Cross-Cultural Communication

Dance

Early Modern European Studies

Economics

English

Film Studies

Fine Arts

French Language and Literature

General Anthropology

Geographic Information Systems

Geography

Geoscience

German Language and Literature

Hispanic Languages and Literatures

History

Human Services

Italian Language and Literature

Japanese Language and Literature

Jazz Studies

Journalism and Mass Communication

Judaic Studies

Korean Language and Literature

Linguistics

Mathematics

Music

Organizational Communication

Organizational Sciences

Peace Studies

Philosophy

Physics

Political Science

Psychology

Religion

Russian Language and Literature

Sociocultural Anthropology

Sociology

Speech and Hearing Science

Statistics

Theatre

Women's Studies

Secondary Fields

Just as students enrolled at the University but outside the College may pursue Columbian College minors as secondary fields, such study is permitted Columbian College students in other schools of the University. Secondary fields are available in the School of Engineering and Applied Science, the School of Business, the School of Medicine and Health Sciences, the School of Public Health and Health Services, and the Elliott School of International Affairs. Columbian College students are limited in the number of hours they may take in courses outside the College ("professional credit" courses). Refer to Courses Outside Columbian College, above.

Preparation for Medical School

A student who plans to apply to medical school fulfills the general requirements of Columbian College stated above and may select any major in Columbian College. Advice about academic preparation for medical school is provided by the health professions advisor in the Office of Undergraduate Studies. For admission to most medical schools, the student must have a minimum of 90 credit hours applicable toward a degree in an approved college of arts and sciences; the 90 hours must include:

Biology—8 credit hours, including laboratory. This may be either in general biology or zoology but may not include separately credited courses in botany.

Chemistry—8 credit hours of general inorganic chemistry (which may include qualitative analysis), including laboratory, and 8 credit hours of organic chemistry, including 2 hours of laboratory.

Physics—8 credit hours, including laboratory.

English—6 credit hours in the usual introductory English composition courses or their equivalents (fulfilled by the University Writing Program at GW).

Many medical schools have additional entrance requirements, which may include courses in biochemistry, genetics, and mathematics. Even when such courses are not required, they are strongly recommended.

With the exception of these specific requirements, applicants are urged to follow their personal interests in developing their course of study. A well-balanced program, rather than a specific field, is the criterion by which an applicant is judged.

Seven-Year Integrated Bachelor of Arts/Doctor of Medicine

In addition to the early selection program described under the School of Medicine and Health Sciences, the University offers a seven-year integrated B.A./M.D. program. The program has

been designed for students of high ability and maturity who have decided, before applying to college, that they wish to become physicians and want to accomplish that goal in a shorter amount of time. Detailed information on this program is available through the College.

Preparation for Law School

Because a broad liberal education is the best undergraduate preparation for law school, Columbian College does not prescribe a prelegal curriculum. Advice about academic preparation for law school is provided by the pre-law advisor in the Office of Undergraduate Studies.

Second Bachelor's Degree

Columbian College graduates who wish to receive a second bachelor's degree following graduation must satisfy the general College requirements and the requirements of their new major and degree and must complete 30 hours in residence in Columbian College. Students with undergraduate degrees from other institutions or from other divisions of the University, if admitted to the College, must meet the same set of requirements.

SCHOOL OF BUSINESS

Dean S. Phillips

Senior Associate Dean P.K. Bagchi

Associate Deans W.R. Baber, M.A. Gowan, R. Green

Organized as the School of Government in 1928, the School of Business has been responsible for over half a century for the professional development of individuals assuming leadership roles in society. The School comprises seven departments—Accountancy, Finance, International Business, Management Science, Marketing, Strategic Management and Public Policy, and Tourism and Hospitality Management. The use of a multidisciplinary approach in educational

programming helps prepare both the generalist and specialist for professional careers in today's complex, organizational society.

The School of Business is a member of AACSB International—The Association to Advance Collegiate Schools of Business, and its undergraduate and graduate programs are accredited by the Association.

Vision—To be a preeminent business school recognized for scholarly research, teaching excellence, and innovative curricula focused on the responsible management of organizations in the global environment.

Mission—To deliver an outstanding education, advance knowledge, and provide practical experience in diverse organizational settings, leveraging the unique advantages of our location in the Washington, D.C., area, in order to enhance the capacities of students, faculty, staff, alumni, and the business community to be productive and principled members of society.

Values—Integrity: demanding transparency, accountability, and ethical behavior; leadership: encouraging problem solving, commitment, and entrepreneurship; scholarship: emphasizing discovery, learning, and innovation; service: responding to the needs of students, academic professions, and the community; relationships: fostering communication, collaboration, and collegiality.

The Bachelor's Degrees

The School offers programs leading to the degrees of Bachelor of Accountancy and Bachelor of Business Administration. The programs include foundation knowledge for business in accounting, behavioral science, economics, mathematics, and statistics. Curricula are designed to provide perspectives on ethical and global issues, the influence of political, social, legal and regulatory, environmental, and technological issues, and the impact of demographic diversity on

organizations. A Bachelor of Business Administration student selects a field of concentration from among business economics and public policy; finance; human resource management; information systems; international business; marketing; sport, event, and hospitality management; or, with faculty approval, may structure an individualized field of concentration reflecting a specific interests in management.

Residence

Of the 120 credit hours required for graduation, a minimum of 30 credits, including at least 27 credits in required business or accountancy courses, must be completed while registered in the School of Business. This requirement applies to students transferring within the University as well as to students transferring from other institutions. Unless special permission is granted by the director of the Advising Center to pursue work elsewhere, the work of the senior or final year must be completed in the School of Business. Students who have successfully completed 75 credit hours at GW may not take courses at a community college.

Academic Work Load

Full-time students in good standing (2.0 overall grade-point average or higher) may register for a maximum of 17 credit hours each semester and 6 credits each summer session. A student employed more than 20 hours a week, who is in good standing, may not take more than 9 credits each semester and 3 credits each summer session. A full-time student on probation may take no more than 13 credit hours of course work; it is strongly recommended that a student on probation not be employed. Full-time students whose overall grade-point average is 3.0 or higher may take up to 18 credits each semester. A student employed more than 20 hours a week, whose grade-point average is 3.0 or higher, may take up to 12 credits. A student who accepts employment after registration or at any time during a semester must report immediately to the director of the

Advising Center so that the program may be adjusted if necessary. Exceptions to these rules require the approval of the director of the Advising Center.

Scholarship Requirements

A student must have the following to graduate: (1) a minimum of 120 credit hours; (2) an overall grade-point average of at least 2.0; and (3) a grade-point average of at least 2.0 in all required 100-level B.B.A. or B.Accy. courses and field-of-instruction–related courses (the major field grade-point average). All courses taken at The George Washington University are included in the overall grade-point average calculation. Elective courses in or out of the School of Business cannot be used as substitutes for required courses in the calculation of the major field grade-point average.

Probation—A student whose grade-point average (either overall or in the major field) falls below 2.0 after completing a minimum of 12 credit hours of study will be placed on probation. Probation by overall grade-point average normally extends over the period in which the student attempts another 12 credit hours of work, which may include remedial studies as prescribed. In those cases in which a student chooses to take a lighter load during the probationary semester, performance will be reviewed at the end of the semester and the student may be suspended at that time. Incomplete grades are not allowed during the probation period. Probation by major field normally extends over the period in which the student attempts 6 credit hours of study in major field course work.

Suspension—A student whose grade-point average (either overall or in the major field) is 1.5 or below in any semester or remains below 2.0 at the end of the probationary period will be suspended. Any outstanding Incomplete grade at the time of suspension must be completed or will become an administrative *F*. A student suspended for poor scholarship may apply for

readmission after the end of the fall or spring semester following the term of suspension. To be considered for readmission, the student must submit acceptable evidence of remedial activity performed during the suspension period and of renewed potential ability to do college-level work. No advanced standing will be assigned for academic work completed while the student is suspended, but the student may petition the director of the Advising Center for consideration of advanced standing after completing a minimum of 12 credit hours of course work here and achieving a cumulative and major field grade-point average of at least 2.0.

A student readmitted after suspension is on probation (see above) and must maintain a current grade-point average determined by the director of the Advising Center until the cumulative and major field grade-point averages are at least 2.0. In no case will the overall probationary period after readmission exceed 24 credit hours of study or the major field probationary period exceed 12 credit hours of study. A student suspended twice for poor scholarship will not be readmitted.

Semester Warning—Any student whose overall or major grade-point average falls between 2.0 and 2.2 will be placed on warning. Though the student's courses will not be restricted, progress during the semester will be monitored. It is the student's responsibility to meet with an assigned advisor during the semester.

Mid-Semester Warning—If a professor files an evaluation showing that a student is doing unsatisfactory work (C- or below), the director of the Advising Center will inform the student in writing of his or her status. This notice constitutes an official direction to consult with the professor and advisor immediately.

Grade of F—A grade of *F* earned in any course completed at GW remains a part of the student's record and is calculated into the grade-point average, even after the course is retaken.

Pass/No Pass Option

A junior or senior student who has a cumulative grade-point average of 2.5 or better may, with the approval of the advisor and the director of the Advising Center, take one upper-level non-business or unrestricted elective a semester and receive a grade of *P*, Pass, or *NP*, No Pass, which will be recorded on the student's transcript but will not be reflected in the grade-point average. No student will be allowed to take more than four pass/no pass courses, with a limit of one per semester. Under no circumstances may a student change from pass/no pass status to graded status, or vice versa, after the last date to withdraw from a course (except in the case of a prerequisite to Math 51, exercise and sport activity, or applied music courses). Required courses may not be taken on the pass/no pass basis, with the exception of BAdm 1 and 2. A transfer student may not choose this option until the second semester of enrollment in the University.

Incompletes

Conditions under which the grade of *I* (Incomplete) is assigned are described under University Regulations. The grade of *I* must be changed by a date agreed on by the instructor and the student but no later than the last day of the examination period for the fall or spring semester immediately following the semester or summer session in which the grade of *I* is assigned. An Incomplete that is not changed within this period automatically becomes an *IF*. In cases of well-documented extenuating circumstances, an instructor and a student may jointly petition the director of the Advising Center for additional time in which to complete the work of the course. Such petitions should be submitted within the same period. The grade of *I* cannot be changed by reregistering for the course here or by taking its equivalent elsewhere. The *I* notation remains on the student's permanent record even after the course has been successfully completed.

Dean's Honor List

The names of students who achieve a grade-point average of 3.75 or higher are placed on the Dean's Honor List for that semester. Appearance on the list is limited to (1) full-time students registered for a minimum of 12 credit hours (provided that the 12 hours are taken for a grade) and (2) part-time students registered for a minimum of 12 credit hours over a period of two consecutive semesters, which may include a summer term.

Independent Research Plan

A junior or senior of demonstrated capacity, with a special interest in the subject matter of a course, may be permitted to undertake study under the personal direction of a regular, full-time member of the faculty, in accordance with the rules of the appropriate department. Credit under this plan is limited to the specific credit hours normally allowed when a course is taken on a class basis. A petition outlining the student's specific study plan must be submitted to the director of the Advising Center prior to beginning any independent study. Generally, a maximum of two independent studies in two separate semesters is permitted.

Earning Credit or Waiving Requirements by Examination

A student may earn credit up to a maximum of 30 credit hours or waive curricular requirements by performing satisfactorily on the following tests:

College-Level Examination Program (CLEP)—See Admissions for general information on the CLEP tests. CLEP tests in Introduction to Business and Fundamentals of Business Law are limited to 1.5 credits each of advanced standing. CLEP tests in general mathematics, college algebra/trigonometry, English composition, accounting, and more advanced courses in business administration are not accepted for advanced standing. Matriculated students who wish to receive credit for CLEP General and Subject Examinations must receive prior approval, through petition, of their advisor and the director of the Advising Center.

Advanced Placement Tests and Achievement Tests—See Admissions.

Special Departmental Examinations—A student may request any department of Columbian College to offer a special examination covering the subject matter of any specific course. (If an appropriate CLEP Subject Examination is available, the department may choose to use it.) The student must offer evidence of sufficient background to have a reasonable command of the subject matter. Departments reserve the right to deny such requests. Credit by special departmental examination is not permitted for the first two years of college-level courses in a native language other than English. A student who has previously taken examinations to waive course requirements may not subsequently take examinations for credit in the same courses. Assigning credit (or waiving a requirement) by special departmental examinations will depend on the department's evaluation of the examination paper. These examinations will normally be of at least three hours' duration. A fee for each course examination is charged for preparation, administration, and grading of the examination. A petition must be submitted to the director of the Advising Center prior to taking the examination.

Waiving Introductory Courses by Examination—Several departments in Columbian College, including English and history, offer periodic waiver examinations for introductory courses. Such examinations may be attempted at the option of the student: a fee is charged. Specific departments should be consulted for further details. Passing a waiver examination does not entitle a student to any credit toward the degree.

The Bachelor of Accountancy and The Bachelor of Business Administration

Curriculum for the First Two Years for All B.Accy. and B.B.A. Students

Freshman Year—BAdm 1–2, 66; UW 20; Econ 11–12; Math 31–32 or 51–52; a two-course sequence chosen from Astr 1–2, BiSc 3–4 or 13–14, Chem 3–4 or 11–12, EES 1–2, Phys 1–2;

one approved elective focusing on a culture or political system other than one's own; one 3-credit restricted elective chosen in consultation with the advisor.

Sophomore Year—Accy/BAdm 51, 52; BAdm 53, 64, 145; Stat 51 or 53; one elective selected with advisor approval to improve communication skills; one course on moral reasoning selected with advisor approval; three 3-credit restricted electives chosen in consultation with the advisor, at least one of which is in the humanities.

Note: CSci 10, 35, 39, 41, Math 3, 6, 9, 10, 20 (without 21), Educ 180, and ExSA courses may not be used for credit toward the B.Accy. or the B.B.A. If the student places in the first semester of a language previously studied in high school, credit toward the degree will not be granted; however, the second semester of a first-year language course that was studied in high school may be taken as the cultural and political diversity elective. For B.Accy. students, a minimum grade-point average of 2.5 is required at the start of the junior year. For B.B.A. students, the field of concentration must be selected no later than the second semester of the sophomore year.

Curriculum for the Second Two Years for All B.Accy. Students

Junior Year—Accy 121, 122, 151, 161, 192; BAdm 110, 115; three approved 3-credit non-accountancy electives, of which two are chosen outside of School of Business departments.

Senior Year—Accy 171, 181, 193, 196; BAdm 150, 197 (BAdm 197 must be taken at GW); four approved 3-credit 100-level non-accountancy electives, of which one must be in the Department of International Business and two must be chosen outside of School of Business departments.

Curriculum for the Second Two Years for All B.B.A. Students

Junior Year—BAdm 110, 115, 120, 130; one analytical tools course and one field tools course; one course in the field of concentration; three 3-credit 100-level electives chosen in consultation with the advisor (two non-business, one unrestricted).

Senior Year—BAdm 55, 135, 150, 197; three courses from the field of concentration; one field-related elective; three 3-credit 100-level electives chosen in consultation with the advisor (two non-business, one unrestricted).

Fields of Concentration

The field of concentration consists of four field courses (along with a field tools course and a field-related elective) chosen from a set of courses designated by the department. The field must be selected no later than the second semester of the sophomore year; the student should contact the Advising Center to declare a field. Students may declare two fields, but they should note that this will increase the number of credit hours required to complete the B.B.A. Fields are listed below, followed by the courses that constitute the field. In all cases, students must consult the academic advisor for an appropriate field-related elective.

Business Economics and Public Policy—Econ 101 and 102 or 158; PSc 116 or 118; and, with approval of the advisor, a course chosen from Anth 150, Econ 136 or 181, Geog 120, PubH 180, or PSc 122.

Finance—Fina 122,, 123, 124, and either 132 or 135.

Human Resource Management—Mgt 116, 117, and two courses from among Econ 165; Mgt 251, 252, 257; Psyc 144.

Information Systems—Mgt 119, 120,, 121, either 123 or a designated section of 190, or a graduate-level Mgt course chosen with approval of the advisor.

International Business—IBus 160 and three additional 100-level IBus courses.

Marketing—Mktg 142, 143, 159, and either 148 or 150.

Sport, Event, and Hospitality Management—TStd 104, 137 or 143, 135 or 144, and 136 or 145.

Individualized Field of Concentration—A student with a minimum GPA of 2.8 and a specific interest in some field of management may design an individualized field of concentration drawing on courses across the University. Past examples of approved individualized fields include emergency response management, media management, and performing arts management. Such a concentration consists of four courses plus an analytical tools elective, a field tools elective, and a field-related elective selected with the guidance of faculty with expertise in the area of interest. All such individualized fields must be approved in advance through an individualized field review committee. Interested students should discuss their ideas with an advisor.

Secondary Field of Study

A secondary field of study in business administration is available in the School of Business; School of Business students may pursue a secondary field in other GW schools. See the brochure “Secondary Fields of Study,” available in the Advising Center.

Students from Other Schools Within the University

Degree candidates from other schools of the University cannot register for more than 21 credits in courses from the B.B.A. program. Typically, a maximum of 6 credits is permitted in courses from the B.Accy. program, unless an advisor recommends an additional 3 credits.

Five-Year Joint Programs Leading to a B.B.A. and a Master’s Degree

The School of Business offers five-year joint programs leading to both a B.B.A. and a master’s degree. Students pursue the regular B.B.A. curriculum in their first three years of study and are enrolled in courses at both the undergraduate and graduate levels during the final two years.

Students apply for admission to the graduate program when they apply for admission to the University and must meet specified GPA and other requirements to remain in the program. During the last two years, the student simultaneously completes requirements for the undergraduate and the graduate degree but is not considered a graduate student until the start of the fifth year of study. The two degrees are awarded concurrently; there are no exceptions. Students who choose to discontinue the program at the end of four years will be required to take additional courses to complete requirements for the B.B.A. A full description of the programs, including admission requirements, can be obtained through the Advising Center.

Bachelor of Business Administration/Master of Science in Information Systems Technology

Application to the B.B.A./M.S.I.S.T. program requires a minimum 3.2 GPA and is available with a field of concentration in information systems development. Students take Mgt 119 and 120 among the third-year electives.

Fourth Year—BAdm 55, 135, 150, 197; two approved 100-level non-business electives; Mgt 121, 280, 282, 284; one approved graduate elective.

Fifth Year—Mgt 287, 298; four field electives chosen from other M.S.I.S.T. courses; one approved graduate elective.

Bachelor of Business Administration/Master of Tourism Administration

Students in the B.B.A./M.T.A. program take TStd 104 and 143 or 137 among the third-year electives. Students are required to gain at least 500 hours of work experience in the tourism, hospitality, sport, event, or related field if they do not have equivalent previous experience.

Fourth Year—BAdm 55, 135, 150, 197; TStd 144 or 135, 145 or 136, 249, 270, 296; two approved 100-level nonbusiness electives; and an approved graduate-level elective.

Fifth Year—12 credit hours in one of the following concentration fields: sustainable destination management, event and meeting management, sport management, or the individualized study option; plus 12 credit hours in approved electives and either TStd 283 and 297 or TStd 299 and 300.

SCHOOL OF ENGINEERING AND APPLIED SCIENCE

Dean T.W. Tong

Associate Dean R.J. Harrington

The School of Engineering and Applied Science was organized in 1884 as the Corcoran Scientific School of Columbian University. It was named in honor of William W. Corcoran, president of the University's Board of Trustees from 1869 to 1888. The school was among the first to accept women for degree candidacy in engineering. The organization and offerings of the school have evolved over the years, but throughout most of its history the program has been characterized by its emphasis on the principles guiding the advancement of technology.

Through its five departments—Civil and Environmental Engineering; Computer Science; Electrical and Computer Engineering; Engineering Management and Systems Engineering; and Mechanical and Aerospace Engineering—the School of Engineering and Applied Science offers undergraduate study leading to the degrees of Bachelor of Science (with majors in biomedical engineering, civil engineering, computer engineering, computer science, electrical engineering, mechanical engineering, and systems engineering), and Bachelor of Arts (with majors in applied science and technology and in computer science). Five-year bachelor's/master's degree programs are available for selected majors. In cooperation with the Law School, an integrated engineering and law program leading to the degrees of Bachelor of Science or Arts and Juris Doctor is offered. An integrated engineering and medicine program leading to the degrees of Bachelor of

Science or Arts and Doctor of Medicine is offered in cooperation with the School of Medicine and Health Sciences. The School offers graduate study leading to the degrees of Master of Science, Master of Engineering Management, and Doctor of Science and to the professional degrees of Engineer and Applied Scientist.

The School of Engineering and Applied Science maintains extensive and varied computing facilities as well as an array of laboratory facilities to support study and research in such areas as general-purpose electronics, computer science, computer engineering, graphics, computer-aided design, robotics and computer-aided manufacturing, computer-aided engineering, artificial intelligence, software engineering, decision support systems, interactive multimedia, power systems, control systems, medical engineering, bioinformatics, combustion diagnostics, fluid mechanics and hydraulics, environmental engineering, propulsion, soil mechanics, thermal sciences and instrumentation, materials science and engineering, thin-film development, and communications, microwaves, and lasers.

SEAS Regulations

Academic Work Load

A full-time undergraduate student who is not on probation may register for no more than 21 credit hours. Students on probation may not register for more than 12 credit hours. A student employed more than 24 hours a week may take no more than 10 credit hours. In exceptional cases these limits may be exceeded with the advisor's permission.

Credit by Examination

Assuming there is no duplication of course work, a maximum of 30 credit hours may be assigned upon admission to the University for any combination of the following.

College Board Advanced Placement (AP) Tests—See Admissions.

College Board College-Level Examination Program (CLEP)—See Admissions.

A student already registered at the University must seek departmental approval before taking a CLEP Subject Examination for credit. Credit may not be earned by passing the examination after having taken the equivalent course or after having taken a waiver examination for the course.

Department Examinations for Waiver or Credit—Registered SEAS students may also take examinations in some academic departments for waiver of or credit for a specific course upon approval of the appropriate department chair; before the test is administered, the student must have demonstrated sufficient preparation to warrant being given the test. An examination for credit is not allowed if an examination for waiver has been successfully completed or if the student has taken the course.

Makeup of Credit for Waived Courses

Waiver of a required course requires approval of the student's faculty advisor and curriculum coordinator. If a course required by the SEAS curriculum is waived, the corresponding credit hours must be earned by satisfactory completion of a university-level academic course, either technical or nontechnical, approved by the student's faculty advisor. If the substituted course would normally be considered part of the student's curriculum, the grade earned will be used in determining grade-point average, Dean's List, probation, and suspension. If the substituted course would not be part of the student's curriculum, the grade will not be included in the above computations.

Scholarship Requirements

To be eligible for graduation a student must have (1) a grade-point average of at least 2.2 for technical courses in the fifth through eighth semesters of the curriculum and (2) a 2.0 overall average for the program taken at SEAS. All computer science courses taken in the Bachelor of

Arts major in computer science are considered technical for this purpose. Grades used to calculate the grade-point average include all grades earned at GW and through the Consortium universities while the student is enrolled at GW. The grades used are for academic courses taken in fulfillment of degree requirements and not for remedial courses or those taken to make up deficiencies. (For example, EFL courses numbered 45 and below will not be considered for purposes of probation, suspension, or Dean's List.)

Non-SEAS courses taken in excess of the number needed to fulfill degree requirements are not considered in determining probation, suspension, or Dean's List status. Only courses required for the degree program are considered in determining whether the student has met graduation requirements.

Probation

Full-time students are placed on probation if their grade-point average is less than 2.0 for one semester or if they receive more than one grade of *F* in one semester or summer session. Part-time students are placed on probation if their grade-point average is less than 2.0 or they have received more than one grade of *F* after accumulating 12 credit hours. For academic purposes, a new grading period begins once this accumulation is reached.

Students on probation who earn a grade-point average of 2.0 or better (for 12 or more credit hours) during the semester on probation but also receive a grade of *F* are continued on probation; students in this category who receive two or more *F*s are suspended.

Full-time students are removed from probation when the grade-point average is 2.0 or more with no grade of *F* during the semester on probation. Part-time students are removed from probation when the grade-point average is 2.0 or higher and they receive no grade of *F* for the next 12 credit hours after being placed on probation.

Suspension

The following cases constitute grounds for suspension: (1) receipt of two grades of *F* any time during a probation period (part-time students receiving two grades of *F* while on probation will be suspended at the time of receipt of the second of these grades); (2) receipt of four grades of *F* in any semester (or the equivalent for part-time students); (3) placement on probation for a third time; (4) accumulation of a grade-point average of (a) 1.5 or less at the end of the sophomore year or upon completion of the 63rd credit in the student's curriculum, (b) 1.9 or less at the end of the junior year or upon completion of the 97th credit in the student's curriculum, or (c) less than 2.0 at any time during the senior year.

Department faculty may designate additional courses to be taken and grades to be received by students who fail to meet but come close to meeting the graduation requirements. Suspension may be held in abeyance until the conditions are or are not met.

Students readmitted on probation will be suspended if they do not attain a minimum grade-point average of 2.0 during their first semester (12 or more credit hours) or if they receive more than one grade of *F* during the period.

Once suspended, a student may not have that suspension rescinded by a grade change at a later date. The student may, however, apply for readmission noting the grade change. Students who have been suspended may not apply for readmission until one year after the suspension. To be considered for readmission, a student must have undertaken academic work at another institution, primarily in mathematics, science, or engineering, during the year of suspension and earned a grade-point average of at least 2.7.

Dean's Honors and Commendation Lists

The names of all students who, in a given semester, take 12 or more graded credit hours in course work that applies to graduation requirements (or in any additional SEAS courses taken) may appear on the Dean's Honor List if a grade-point average of 3.5 is achieved or on the Dean's Commendation List if a grade-point average of 3.0 is achieved. No disciplinary action may have been taken against the student, and no more than one grade below *B-* and no grades below *C-* may have been earned. A student who receives a grade of *I* (Incomplete) during a semester will not be placed on the Dean's Honors or Commendation List for that semester unless the *I* is removed no later than 30 days after the end of the marking period and the student continues to meet all the requirements for the Dean's Honors or Commendation List.

Incompletes

Conditions under which the grade of *I* (Incomplete) may be assigned are described under University Regulations. If a grade of *I* is not changed to a letter grade within 30 days, decisions on probation, removal from probation, and suspension will be made with the information on hand, in conformance with SEAS regulations.

Although the grade of *I* may remain on the record for a maximum of one year, the instructor should normally set a much briefer period within which the uncompleted work (usually the final examination or required paper) must be made up. The grade of *I* cannot be removed by the student's reregistering for the course here or taking its equivalent elsewhere. A grade of *I* that is not removed after one calendar year or at the time of graduation of the student, whichever occurs first, will be changed on the permanent record to a grade of *IF*. When the *I* is changed to a letter grade, the grade of *I* followed by the letter grade (e.g., *IB*) will appear on the student's record. The grade for which the *I* is changed will be applied to the grade report for the semester or

summer session during which the change is made for the purposes of determining probation, suspension, grade-point average, and Dean's and other honor lists.

Pass/No Pass Grading System

SEAS students may not take courses required for graduation on the pass/no pass (*P/NP*) grading system. They may, however, take courses outside their regular SEAS academic program under this grading system.

Students whose status of probation or suspension depends on a grade of *P* are given 30 days to have the grade changed. If not changed by the end of that period, the *P* will be considered a *C* for probation, suspension, Dean's List, and graduation purposes, and a grade of *NP* will be considered an *F*.

Residence

Thirty hours must be completed in residence. Full-time students normally complete their programs in four years. The core curriculum—the program of the first four semesters—provides the base of scientific principles and mathematical techniques necessary for the professional courses taken in the last four semesters.

Advisory System

Every entering undergraduate student is assigned a faculty advisor to assist in orientation in the professional discipline. Faculty advisors counsel students on their programs of study, achievement and maintenance of satisfactory scholastic performance, professional development, and extracurricular activity as part of the educational process. The advisor represents the student in all cases requiring faculty action.

Students must obtain their advisor's approval of their program of study prior to registration for each academic semester and summer session. The advisor's approval must be obtained before

registering for a course at another institution. Until the work required for the degree is completed, students must consult with their advisors in all academic matters. However, an advisor may not deny entry into any course or activity to which the student is entitled under the regulations of the School.

Courses in the Humanities and Social Sciences/Bachelor of Science Programs

With the assistance of the advisor, each student prepares a program of elective courses in the humanities and social sciences. For most B.S. curricula, the program normally consists of a minimum of 18 credit hours, divided equally between the humanities and social sciences. Each 9-hour group must include two courses in one subject area and a third course in a different subject area. When a foreign language is taken as part of the humanities requirement, the following rules apply: (1) the foreign language studied must not be a native language of the student, unless the courses taken are literature courses; (2) if the student has studied the language previously, he or she must first take a placement test given by the language department concerned and enroll in a course recommended by that department; and (3) the student may use at most two foreign language courses to satisfy SEAS's humanities requirements. If two courses are used, they must be in the same foreign language. The advisor and the curriculum coordinator must approve the program.

Since the SEAS curricula are, by necessity, oriented toward technical subjects, the program in the humanities and social sciences should consist of courses that broaden the student's outlook. Courses in areas such as anthropology, economics, foreign languages, geography, history, literature, philosophy, political science, psychology, and sociology are considered appropriate.

Mission Statements and Educational Objectives

Department of Civil and Environmental Engineering

Mission Statement—The mission of the Department of Civil and Environmental engineering is to provide a broad-based, rigorous education in civil engineering, which leads to educating graduates who have a fundamental understanding of the underlying concepts of engineering analysis and design, and a sense of responsibility for professional service.

Educational Objectives—The civil engineering programs are designed to produce graduates who are well prepared to engage immediately in the practice of civil engineering and/or to continue their education in graduate studies in civil engineering or other professional studies such as law, medicine, and business. The undergraduate curriculum in civil engineering is designed to produce graduates who understand the basic principles of applied mathematics, basic sciences, and computing and have the ability to apply these principles in the analysis and solution of civil engineering problems; are trained to conduct, interpret, and evaluate the laboratory experiments used in the main branches of civil engineering; have the skill and knowledge to use modern engineering and computing tools in the solution of the challenging problems encountered in the civil engineering profession; possess a broad education in engineering as well as the humanities and social sciences to comprehend and envision the broader socioeconomic impacts and relevance of civil engineering projects; have the skills required for effective communication as a professional and for participation in the multidisciplinary efforts needed in many civil engineering projects; are fully aware of professional and ethical issues in the practice of civil engineering; and understand the need for lifelong learning and possess the necessary skills to pursue it.

Department of Computer Science

Mission Statement—The mission of the Department of Computer Science is to serve the global community by providing high-quality computer science education, research, and professional service and to advance computer technology in areas of selective excellence.

Educational Outcomes—The computer science program is designed to prepare students to start a professional career or enter graduate school and show proficiency in the following areas: software system design, software development, and project management; fundamentals of computer science (discrete structures, data structures, algorithms, and theory of computing); computer architecture, translators, networks, operating systems, and databases; and oral and written communication. An understanding of the overall social and professional context in which computing activities take place is emphasized.

Department of Electrical and Computer Engineering

Mission Statement—The mission of the Department of Electrical and Computer Engineering is to motivate and inspire our students by providing high-caliber, fully integrated programs in electrical, computer, and biomedical engineering in order to provide leadership in a rapidly evolving global information society in the service of humanity and to advance the state of knowledge in our disciplines by actively pursuing scholarly research for publication and dissemination.

Educational Objectives—The objectives of the programs are to educate students in the principles of engineering, including cognizance of their responsibilities as members of society. The engineering education is based on the sciences and the principles of design. Social responsibilities are instilled through a balanced program in the humanities and social sciences as well as coverage of specific topics in professional ethics and social responsibilities. The programs provide students with a solid foundation in electrical, computer, and biomedical

engineering through a balanced curriculum integrating the underlying scientific and mathematical knowledge with the latest technological developments. The curriculum is designed to produce engineers capable of functioning in the present technological environment and of adapting to future directions of the profession. Specifically, the programs aim to teach students how to analyze and implement complex interdisciplinary engineering projects; to give students a strong foundation for graduate studies in their field; to prepare students for competitive and challenging industrial applications; to teach students how to use state-of-the-art computer tools for solving engineering problems; to expose students to hands-on engineering experience through laboratory courses; to cultivate students' abilities to communicate and work effectively in teams; and to help students develop an understanding of the ethical issues and global perspectives arising in the practice of the engineering profession.

Department of Mechanical and Aerospace Engineering

Mission Statement—The mission of the Department of Mechanical and Aerospace Engineering is to educate students to become professional mechanical and aerospace engineers who are confident in their understanding of science and technology, who are creative in the face of new challenges, and whose analytical skill and thirst for lifelong learning will open new career horizons; to contribute to society through the conduct of relevant research at the forefront of mechanical and aerospace engineering knowledge and to provide opportunities for students to participate and learn through mentorship with the faculty; and to serve the nation, the community, and the university.

Educational Objectives—The undergraduate mechanical engineering program provides an integrated program of instruction in mechanical engineering in order to produce graduates who can practice engineering professionally and develop a successful career in engineering.

Mechanical engineering is a broad field covering both design and analysis of complex systems that are useful to society. The well-educated mechanical engineer must have a thorough understanding of mechanics (solid and fluid), energy, and the response and control of mechanical systems designed to perform a useful function. To fulfill these requirements, our program is designed to give students a thorough grounding in mathematics and the basic sciences and to teach them to apply that knowledge in the design and analysis of engineering systems; to teach students to design engineering systems/devices and to analyze and solve engineering problems of complex scope; to prepare students for professional engineering practice and for graduate study; and to give students the understanding of the need for lifelong learning and the skills to pursue it. These objectives incorporate the development of effective oral and written communication skills, the use of software and other tools, and knowledge about the ethical, social, and economic impact of engineering practice on society.

Bachelor of Science Degree Programs

Check with the department concerned for total credit requirements for the degree programs that follow.

The listed curriculums on the following pages all assume electives to be at least 3 credit hours. Credit toward the degree is not allowed for exercise and sport activities courses. The key to abbreviations for course designations can be found at the beginning of the Courses of Instruction section.

Biomedical Engineering

Offered by the Department of Electrical and Computer Engineering, this inno-vative program provides a strong foundation in the basic sciences as well as the theory and practice of biomedical engineering. Students choose an area of specialization from bioinformatics,

biomechanics, instrumentation, telemedicine, or medical preparation. Distinguishing features of the program are its specialty laboratories, summer internships in metropolitan-area private or federal laboratories, and a capstone design seminar.

First Semester—UW 20; SEAS 1; ECE 1; BiSc 13; Chem 11; Math 31.

Second Semester—CSci 49; ECE 2; Chem 12; Math 32; Phys 21; elective.

Third Semester—CSci 103; ECE 11, 153; Math 33; Phys 22, 127.

Fourth Semester—ApSc 113; ECE 20, 117, 154, 159; Phys 128; elective.

Fifth Semester—ApSc 115; ECE 155; MAE 238; electives (7–11 credits).

Sixth Semester—ECE 121, 140, 156; electives (6–8 credits).

Seventh Semester—ECE 157, 184, 186; electives (9 credits).

Eighth Semester—ECE 158; Phil 135; electives (9–12 credits).

Electives must include three 3-credit social sciences courses and two 3-credit humanities courses. Remaining elective credit is chosen from lists of specified courses in the chosen area of specialization—bioinformatics, biomechanics, instrumentation, medical preparation, or telemedicine.

Civil Engineering

Civil engineering encompasses those branches of engineering most closely related to the control and improvement of our environment and of the physical conditions of life. Civil engineers apply many technical specialties in order to plan, design, and construct projects that range from buildings and transportation systems to space stations and space habitats.

First Semester—UW 20; SEAS 1; CE 1; Math 31; Chem 11; humanities or social sciences elective.

Second Semester—CSci 50; MAE 4; Math 32; Phys 21; humanities or social sciences elective.

Third Semester—ApSc 57, 113; Math 33; Phys 22; humanities or social sciences elective.

Fourth Semester—ApSc 58, 115, 130; CE 120; MAE 131; humanities or social sciences elective.

Fifth Semester—CE 117, 121, 166, 167; EES 1; MAE 126; humanities or social sciences elective.

Sixth Semester—CE 122, 188, 189, 192, 193, 194; humanities or social sciences elective.

Seventh Semester—CE 168, 185, 191, 195, 197; technical elective selected from list below.

Eighth Semester—CE 190, 196, 232; technical elective; design elective.

Technical Electives—ApSc 199; CE 198, 199, 205, 206, 207, 210, 211, 230, 231, 234, 242, 243, 244, 250, 251, 252, 253, 254, 257, 258, 272, 273, 290; EMSE 260; MAE 231, 234, 235, 236, 237.

Design Electives—CE 206, 207, 211, 241, 251, 252, 269.

The Department of Civil and Environmental Engineering also offers the Bachelor of Science major in civil engineering with the options listed below. Additional information on the options can be found at www.cee.seas.gwu.edu.

Environmental Engineering Option in Civil Engineering—The environmental engineering option leads to a bachelor's degree in civil engineering. Students are prepared to work in technical environmental fields such as hazardous waste treatment, environmental impact assessment, and water resources engineering. Students are also prepared to pursue graduate study in environmental engineering.

Transportation Engineering Option in Civil Engineering—The transportation engineering option leads to a bachelor's degree in civil engineering. Transportation engineers design, construct, maintain, and upgrade transportation facilities, including highways, railroads, airfields,

and ports. The program emphasizes automotive, highway, and multi-modal transportation safety and security.

Medical Preparation Option in Civil Engineering—The medical preparation option leads to a bachelor's degree in civil engineering and prepares the student for application to medical school. The student is also prepared to work in research and development or to pursue graduate study in the fields of biomechanics and biotechnology.

Computer Engineering

Computer engineering combines electronic design, computer architecture, programming of computing systems, computer networks, and applied mathematics. Students in the program are prepared in the theory and application of hardware and software design, computer networks, embedded systems, and very large scale integrated (VLSI) circuit design and applications. Students can take electives in advanced topics, such as optical networks, broadband wireless networks, and technologies for the next generation of information systems.

First Semester—UW 20; ECE 1; Chem 11; Math 31; SEAS 1; ECE 1; elective.

Second Semester—CSci 49, 123; ECE 2; Math 32; Phys 21; elective.

Third Semester—ApSc 113; CSci 103; ECE 11; Math 33; Phys 22.

Fourth Semester—ApSc 115; ECE 20, 117, 140; elective.

Fifth Semester—CSci 156; ECE 12, 122, 141, 162.

Sixth Semester—ECE 30, 144, 147, 156, 161, 181; elective.

Seventh Semester—ECE 126, 157, 182; two electives.

Eighth Semester—ECE 128, 158; Phil 135; two electives.

The eight electives must include three 3-credit courses in the social sciences, two 3-credit courses in the humanities, and three 3-credit technical courses. Technical electives may be

chosen with the approval of the advisor from advanced undergraduate or graduate courses in engineering, computer science, mathematics, physical sciences, or biological sciences.

Computer Science

The program combines systems design, computer software development, networks, computer architecture, project design algorithms, and mathematics to provide a broad background in the disciplines that underlie computer science. Students are prepared to design and implement the software needed for Internet operations, computer graphics and animation, and applications and for small, large, and embedded computing systems.

First Semester—UW 20; CSci 41, 53; math requirement; SEAS 1; humanities or social sciences elective.

Second Semester—CSci 123, 133; Math 32; science requirement; humanities or social sciences elective.

Third Semester—CSci 135, 143; math requirement; science requirement; humanities or social sciences elective.

Fourth Semester—ApSc 115; CSci 136, 147; science requirement; humanities or social sciences elective.

Fifth Semester—CSci 150, 151, 156; math or science elective; humanities or social sciences elective.

Sixth Semester—CSci 160, 161, 178; humanities or social sciences elective; unrestricted elective.

Seventh Semester—CSci 169, 183, 195, breadth elective; unrestricted elective.

Eighth Semester—CSci 196, computer science elective; breadth electives (6 hours); unrestricted elective.

Mathematics requirements can be met by taking Math 20–21 and 32 or Math 31 and 32 and a math elective. All students must take three math courses not counting Math 20; students who take Math 20 must take a math elective instead of one of their unrestricted electives. Science requirements must be chosen from BiSc 13–14, Chem 11–12, and Phys 21–22. Two of the three required science courses must form a two-course sequence. Breadth electives can be in any desired fields except math, computer science, electrical engineering, further work in the required sciences, or computing-related courses offered in other departments. Computer science electives may be selected from courses numbered 140 or above that are not required, including, with approval, graduate computer science courses.

The Department of Computer Science also offers the Bachelor of Science major in computer science with the options listed below. Specific information on the options can be found at www.cs.gwu.edu/academics/.

Bioinformatics Option in Computer Science—This option is an interdisciplinary area at the intersection of biological, computer, and information sciences necessary to manage, process, and understand large amounts of data, such as that from the sequencing of the human genome or from large databases containing information about plants and animals for use in discovering and developing new drugs.

Biomedical Computing Option in Computer Science—This option is at the intersection of health care and computer science. It involves all aspects of the analysis, management, and visualization of information in biomedical applications. The technology is based on computer science—but the field demands knowledge of the problems that need to be solved in medicine and health care.

Computer Security and Information Assurance Option in Computer Science—This option encompasses network security, information warfare, cryptography, information policy, and computer forensics. It involves use of sophisticated software and hardware tools able to detect and prevent malicious intrusion or destruction of vital government and business computer systems and networks.

Digital Media Option in Computer Science—This option encompasses audio, video, the World Wide Web, and other technologies that can be used to create and distribute digital content. Digital media uses computers to create virtual worlds from which visuals can be generated and with which humans can interact.

Medical Preparation Option in Computer Science—This option is for students interested in pursuing a computer science major with preparation for admission to a school of medicine by combining additional natural science course work with computer science course requirements.

Electrical Engineering

Electrical engineers design the enabling technology for modern telecommunications networks, including the Internet, biomedical instrumentation, and electromagnetic applications. The program focuses on signal processing; communication theory and practice; voice, data, video and multimedia communication networks; very large scale integrated (VLSI) circuit design and applications; and control systems. Students can take electives in advanced topics, such as optical networks, broadband wireless networks, and technologies for the next generation of information systems.

First Semester—UW 20; Chem 11; Math 31; SEAS 1; ECE 1; elective.

Second Semester—CSci 49; ECE 2; Math 32; Phys 21; two electives.

Third Semester—ApSc 113; CSci 103; ECE 11; Math 33; Phys 22.

Fourth Semester—ApSc 114; ECE 20, 117, 140; elective.

Fifth Semester—ApSc 115; ECE 12, 122, 141, 162.

Sixth Semester—ECE 31, 121, 143, 144, 147, 156.

Seventh Semester—ECE 32, 126, 157, 172; elective.

Eighth Semester—ECE 158, 177; Phil 135; three electives.

The eight electives must include three 3-credit courses in the social sciences, two 3-credit courses in the humanities, and three 3-credit technical courses. Technical electives may be chosen with the approval of the advisor from advanced undergraduate or graduate courses in engineering, computer science, mathematics, physical sciences, or biological sciences.

Mechanical Engineering

Mechanical engineering encompasses a vast range of industrial activities. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of complex systems. Applications include aerospace, energy conversion, computer-aided design and manufacturing, power and propulsion systems, robotics, and control systems.

First Semester—UW 20; SEAS 1; MAE 1; Math 31; Chem 11; humanities or social sciences elective.

Second Semester—CSci 49 or 50, MAE 2, 4; Math 32; Phys 21; humanities or social sciences elective.

Third Semester—ApSc 57, 113; Math 33; Phys 22; humanities or social sciences elective.

Fourth Semester—ApSc 58, 130; ECE 11; MAE 117, 131.

Fifth Semester—CE 120; MAE 126, 166, 167, 190, 192.

Sixth Semester—ApSc 115; MAE 120, 134, 187, 191; humanities or social sciences elective.

Seventh Semester—MAE 149, 182, 193; technical electives (6 hours); humanities or social sciences elective.

Eighth Semester—MAE 152, 195, 196; technical electives selected from chosen area (6 hours); humanities or social sciences elective.

Technical Electives

Mechanical Systems Analysis and Design—ApSc 199; MAE 162, 163, 197, 198, 231, 232, 234, 235, 236, 237, 240, 241, 243, 247, 249, 251, 287.

Fluid Mechanics, Thermal Sciences, and Energy—ApSc 199; MAE 155, 162, 163, 198, 210, 220, 221, 226, 229, 259, 260, 262, 280, 282, 283.

The Department of Mechanical and Aerospace Engineering also offers the Bachelor of Science major in mechanical engineering with the options listed below. Additional information on the options can be found at <http://mae.seas.gwu.edu>.

Aerospace Option in Mechanical Engineering—The aerospace engineering option leads to a bachelor's degree in mechanical engineering while preparing the student to work in the aerospace industry or to pursue graduate study in aerospace engineering. It provides a strong foundation in aerodynamics, airplane performance, propulsion, aerospace structures, orbital mechanics, spacecraft dynamics, and aircraft and spacecraft design.

Biomechanical Engineering Option in Mechanical Engineering—The biomechanical engineering option leads to a bachelor's degree in mechanical engineering while preparing the student to work in the biomedical industry or to pursue graduate study in biomedical engineering. It provides a strong foundation in human anatomy and physiology, biomechanics, biomaterials, and design of biomedical devices.

Medical Preparation Option in Mechanical Engineering—The medical preparation option leads to a bachelor's degree in mechanical engineering and prepares the student for application to medical school. The student is also prepared to work in research and development or to pursue graduate study in the fields of biomechanics and biotechnology.

Patent Law Option in Mechanical Engineering—The patent law option in mechanical engineering leads to a bachelor's degree in mechanical engineering while providing a strong foundation in fundamental principles of patent law and the influences of the U.S. patent system on modern engineering design. A student in this option obtains background that can lead to work as a technical specialist in a patent law firm or in the patent department of an industrial employer. The option also provides excellent preparation for pursuit of a subsequent J.D. that may focus on intellectual property law.

Systems Engineering

The multidisciplinary field of systems engineering applies engineering techniques and mathematical methods to improve planning and decision making in organizational systems composed of people, machines, and procedures. By observing, understanding, modeling, and predicting the behavior of such systems, practitioners of systems engineering assist the decision-making process that seeks to design and operate the systems optimally. Systems engineering finds application in many areas, including communications, energy, environment, finance, health care, information technology, marketing, national defense, project management, software development, and transportation.

Each student must participate in an appropriate internship/co-op experience during the last two years of the program. This requirement may be satisfied by an approved full-time summer position after the second or third year or by one or two approved part-time positions requiring

15–20 hours per week during two of the final four semesters. A position obtained through the GW Co-op Office will usually be acceptable; the position may be either paid or unpaid.

The systems engineering program is designed to provide the student a broad and solid education in the basics of mathematical modeling, software and information systems, and the treatment of uncertainty. Analytical thinking is stressed in order to prepare the student for graduate education or productive professional employment. The program is planned to develop the student's communication skills and awareness of the current professional world.

First Semester—UW 20; CSci 41; EMSE 1; SEAS 1; Math 31; science elective.

Second Semester—Comm 40, 41, or 42; Econ 11; Math 32; science elective; humanities or social sciences elective.

Third Semester—ApSc 113; CSci 53; Math 33; science elective; humanities or social sciences elective.

Fourth Semester—ApSc 115; CSci 133; EMSE 109, 160; humanities or social sciences elective.

Fifth Semester—ApSc 116; CSci 143; EMSE 101, 135; humanities or social sciences elective.

Sixth Semester—CSci 110 or 147; EMSE 102, 173; technical elective; 100-level elective in SEAS, mathematics, or statistics; humanities or social sciences elective.

Seventh Semester—EMSE 154, 171, 211; Mgt 120; Stat 183; technical elective.

Eighth Semester—EMSE 182, 191; Mgt 121 or CSci 178; two technical electives.

Technical Electives

Each systems engineering major will gain specific expertise in a chosen technical area by taking a four-course sequence from another department or departments of the University. The four technical electives are selected with the approval of the student's academic advisor. Areas

frequently chosen are computer science, economics, finance, management, mathematics, naval science, statistics, and specific fields of engineering.

The Department of Engineering Management and Systems Engineering also offers the Bachelor of Science major in systems engineering with a medical preparation option. Additional information can be found at www.emse.gwu.edu.

Medical Preparation Option in Systems Engineering—The medical preparation option leads to a bachelor's degree in systems engineering and quantitatively prepares students for medical careers through a program that emphasizes decision modeling. Decision modeling is increasingly applicable to the medical field because of the growing use of computers and information systems in medicine and the interplay of diagnosis, treatment, and economics.

Bachelor of Arts Degree Programs

The School of Engineering and Applied Science offers a Bachelor of Arts degree, with majors in applied science and technology and in computer science. Each program provides a strong and level base for students who intend to make their careers in fields allied to science and technology or to computer science.

Applied Science and Technology

The Bachelor of Arts major in applied science and technology is a broad-based engineering-oriented program, with a breadth of liberal arts, for students who intend to make their careers in fields allied to science and technology and/or continue their education toward professional careers in law, medicine, business, teaching, or the media. It is designed to help students pursue their goals in a world that relies more and more upon science and technology.

First Semester—UW 20, CSci 41, EMSE 1, SEAS 1, Chem 11, Math 20.

Second Semester—CSci 10, Chem 12, Math 21, humanities or social sciences elective, arts elective.

Third Semester—CSci 49 or 53, Math 32, Phys 1, literature elective, unrestricted elective.

Fourth Semester—ApSc 115, EMSE 160, Phys 2, literature elective, unrestricted elective.

Fifth Semester—BiSc 13, EMSE 101, Comm 40 or 41 or 42, MAE 4, allied minor elective.

Sixth Semester—BiSc 14, ECE 11, two allied minor electives, humanities or social sciences elective.

Seventh Semester—MAE 192, ECE 184, EMSE 135, allied minor elective, humanities or social sciences elective.

Eighth Semester—CE 190, allied minor elective, humanities or social sciences elective, three unrestricted electives.

Electives—Electives in literature and arts are chosen from specified lists of courses available from the advisor. Allied minor electives are selected, with the approval of the advisor, to form a coherent and meaningful program of 15 credit hours. Popular selections include biology, business, communication, computer science, design, economics, engineering, environmental studies, finance, international business, management, mathematics, media, medical preparation, psychology, statistics, and operations research.

Computer Science

The Bachelor of Arts major in computer science provides a broad-based liberal arts curriculum for students who wish to augment technical knowledge with business, communication, and management skills. Foundation courses focus on mathematics, science, programming methodology and skills, computer organization and design, and implementation of algorithms. Additional breadth or depth is afforded by a selection of computer science electives.

The program is designed for students with interests in two or more disciplines. Accordingly, students in this major must complete a minimum of 24 credits of 100-level courses in another academic department. Additional course requirements include UW 20; Math 20–21 or 30, 31; CSci 41, 53, 123, 133, 135, 143, 147, 178; four electives chosen from designated CSci courses; general curriculum requirement courses, chosen from specified lists available from the advisor, in social or behavioral science, natural science, statistics, humanities, literature, language and culture, and creative and performing arts. Students are expected to undertake a significant independent project by completing CSci 195 and 196 or a course in another field that includes a thesis or significant project.

The minimum number of credits required for the major in computer science is 121; the credit total depends on whether the student chooses to complete a second major or to complete an option within the computer science major. Options include bioinformatics, biomedical computing, digital media, and medical preparation. Additional information about the Bachelor of Arts major in computer science as well as each of the options is available at www.cs.gwu.edu/academics/.

Special Programs

Five-Year Programs

Five-year dual degree programs available to SEAS students include the B.A. or B.S. with a major in computer science with an M.S. in the field of computer science as well as the B.S. with a major in systems engineering with one of the following four master's programs: M.S. in the fields of systems engineering or engineering management, M.E.M. (Master of Engineering Management), and M.A. in the field of economics. Specific information is available from the departments concerned. In addition, a five-year program leading to a B.A. with a major in

physics from Columbian College of Arts and Sciences and a B.S. in any SEAS undergraduate major is available; consult the SEAS Office of the Dean or the Department of Physics.

Integrated Engineering and Law Program

In addition to the combined bachelor's/master's programs that may be completed in five years, the University offers the integrated engineering and law program. The program provides an opportunity for very highly qualified high school students to follow an education path composed of a B.S. or B.A. degree in a SEAS field and then a J.D. degree, by assuring admission to the Law School's J.D. program for students who meet stated conditions. Detailed information on this program is available from the Office of Admissions.

Integrated Engineering and Medicine Program

The University offers an eight-year, integrated engineering and medicine program that provides an opportunity for very highly qualified high school students to earn a B.S. or B.A. degree in a SEAS field and then an M.D. degree, by assuring admission to the School of Medicine and Health Sciences M.D. program for students who meet stated conditions. Detailed information is available from the Office of Admissions.

Honors Research Program

To provide individualized research experience to academically gifted students, the School has established an Honors Research Program. A student who maintains a grade-point average of 3.3 or above or is admitted to the School with a combined SAT score of 1250 and a rank in the upper 10 percent of his or her high school class is eligible for this program. Participants attend an honors research seminar and each works individually with a faculty member, performing a research project of mutual interest. Students participating in the program earn 3 credits per semester; a minimum of 9 credits is needed to complete the program. Upon written request by

the student, 6 of these credits may be used as technical electives. Qualified students interested in applying for the program should contact the honors research chairman of the department in which the research is to be conducted.

Minors and Secondary Fields of Study

School of Engineering and Applied Science students with majors other than systems engineering may graduate with a minor in operations research in addition to their major. Four courses are required for the minor: EMSE 101, 102, 154 or 173, and a fourth course selected from EMSE 135, 154, 171, 173, 182. Depending on the student's major, additional credit hours beyond the minimum required for the major may be necessary in order to complete the minor in operations research; students should consult their advisors before embarking upon the minor requirements.

SEAS students in majors other than computer science may complete a minor in computer science with four approved computer science courses that are not required in their major program.

The School offers secondary fields of study in computer engineering, computer science, electrical engineering, engineering analysis, and operations research to students in other schools of the University. SEAS students are cautioned to consult their advisor and department chair before enrolling in a secondary field of study in another school of the University.

Double Majors

A student who completes the requirements for two majors in SEAS may graduate with a double major, provided the two majors are in different departments. The student should consult advisors in the two departments and declare both majors on the appropriate form in the SEAS Student Records Office.

A SEAS student may also pursue a second major in Columbian College of Arts and Sciences, and a CCAS student may pursue a second major in SEAS, provided that permission has been obtained from the appropriate administrative office of each of the two schools.

A SEAS B.A. student may pursue a second major in the Elliott School of International Affairs, and an Elliott School student may pursue a second major in SEAS, provided that the SEAS major leads to a B.A. and permission has been obtained from the appropriate administrative office of each of the two schools.

In all cases, degrees are earned from the home school, and students must complete the major in their own school in order to graduate.

3:2 Dual-Degree Programs Combining Liberal Arts and Engineering

The School of Engineering and Applied Science has developed 3:2 dual-degree programs in liberal arts and engineering with the following accredited institutions: Bowie State University, Gallaudet University, University of Richmond, Hood College, Bridgewater College, St. Thomas Aquinas College, and Trinity College of Washington, D.C.

Students initially enroll in the 3:2 dual-degree program at one of the above institutions and pursue a three-year course of studies covering social sciences, humanities, mathematics, physics, and chemistry, which helps the student develop broad cultural perspectives, analytic abilities, and communication skills. Students then follow a two-year program at the School of Engineering and Applied Science. During this phase of study, students may specialize in any of the areas of engineering or computer science offered in the School's regular four-year programs. Upon successful completion of the two-year program at George Washington University, students are awarded two baccalaureate degrees: a B.S. or B.A. from the first institution and a B.S. in

engineering or computer science from GW. For further information on the 3:2 dual-degree programs, contact the admissions offices of the institutions listed above.

In addition, SEAS participates in a 2:2 program with Richmond College in London, England.

ELLIOTT SCHOOL OF INTERNATIONAL AFFAIRS

Dean M.E. Brown

Associate Deans H.L. Agnew, D.A. Grier, E.A. McCord

The Elliott School of International Affairs offers graduate and undergraduate programs to prepare individuals for understanding and working in an increasingly globalized world. The historical roots of the Elliott School extend back to the establishment of the School of Comparative Jurisprudence and Diplomacy in 1898. In 1966, the School separated from the School of Government, Business, and International Affairs to become an independent unit, the School of Public and International Affairs. In 1987, the name was changed to the School of International Affairs, and in 1988 the School was renamed in honor of Evelyn E. and Lloyd H. Elliott. Lloyd Elliott was the President of The George Washington University from 1965 to 1988.

The Degree of Bachelor of Arts

The Elliott School offers programs leading to the degree of Bachelor of Arts with majors in international affairs, Asian studies, Latin American and hemispheric studies, and Middle Eastern studies. These programs provide a broad liberal arts education and depth in historical and contemporary issues in international affairs. The programs are interdisciplinary and multidisciplinary, combining courses offered through the School with courses offered by other schools and departments of the University.

General Requirements for the Degree

Academic Work Load

The normal academic work load for a full-time student is 15 credit hours. A full-time student not on probation may take a course load of up to 17 credit hours. A student with a strong academic record may take up to 18 credit hours with the approval of the dean (additional tuition charges apply). Students on probation are limited to 13 hours. Students doing internships or working are advised to reduce their course load.

Scholarship Requirements

In order to graduate, a student must have the following: (1) 120 credit hours of passing grades (courses in exercise and sport activities cannot be included in the required hours); and (2) a cumulative grade-point average of at least 2.0.

Dean's Honor List

The name of every student who attains a 3.5 grade-point average in course work is placed on the Dean's Honor List for that semester. Appearance on the list is limited to full-time students registered for a minimum of 12 credit hours in a given semester and to part-time students registered for a minimum of 12 credit hours over a period of two consecutive semesters, which may include a summer term.

Academic Standing

A student whose cumulative grade-point average is less than 2.0 but at least 1.0 any time after having attempted a minimum of 24 credit hours is placed on probation: "first probation" for the initial semester, "second probation" if continued on probation for a second semester. For part-time students and those enrolled in summer sessions, a semester is interpreted to mean a time interval in which at least 12 credit hours have been attempted. A student on probation is limited to no more than 13 credit hours of course work per semester.

A student who resumes a cumulative grade-point average of 2.0 or more after a first or second semester on probation is removed from probationary status. Failure to resume a cumulative grade-point average of 2.0 after two successive semesters on probation results in suspension. The Dean's Council may continue a student on probation if satisfactory progress is demonstrated during the probation period.

A student whose cumulative grade-point average falls below 1.0 any time after having enrolled in a minimum of 24 credit hours as a student in the Elliott School will be suspended.

Students who are suspended for poor scholarship may apply for readmission after the lapse of one fall or spring semester. To be considered for readmission, the student must submit evidence to the Dean's Council of conduct during absence from the University which indicates that the student will profit from readmission. A student suspended twice for poor scholarship will not be readmitted.

Semester Warning—A student whose cumulative grade-point average is less than 2.0 after attempting a minimum of 12 credit hours is placed on semester warning at the end of the semester and is strongly advised to take corrective measures (e.g., limitation of course load to no more than 13 credit hours).

Incompletes

Conditions under which the grade of *I* (Incomplete) may be assigned are described under University Regulations. Incomplete course work must be completed no later than one calendar year from the last day of the examination period of the semester or summer session in which the grade of *I* was assigned. When work for the course is complete, the grade earned will be indicated in the form of *I*, followed by the final grade. The indication of *I* cannot be removed from the transcript. A grade of *I* that is not changed within this period automatically becomes an

IF. The grade of *I* cannot be changed by reregistering for the course at GW or by taking its equivalent elsewhere. In cases of well-documented extenuating circumstances, an instructor and a student may jointly petition the Dean's Council for additional time in which to complete the work of the course. Such petitions should be submitted within a year of the assignment of the grade of *I*.

Residence

Students must complete at least 60 of their final 90 hours in residence to earn a degree in the School. Students approved for study abroad during their junior or senior year may request an exception through the Office of Academic Advising and Student Services. Note that in all cases a total of 60 credit hours in residence is required for Latin or special honors. Except in special circumstances, at least 9 of the final 15 hours must be completed in residence.

Internships

Internships offer students the opportunity to make practical use of the knowledge they acquire in the classroom. Undergraduates who have completed at least 30 credit hours and have a cumulative grade-point average of at least 2.5 are eligible to arrange internships for credit (to a total maximum of 6 credits toward the degree). Academic work in the field of the internship is required. A zero-credit internship is also available.

Internships are available in the private and public sectors. Students are responsible for locating their own internships; listings are posted in the GW Career Center.

Double Majors

A student who completes the requirements of two majors in the Elliott School (for example, international affairs and Asian studies) may graduate with a double major. Such a student should

consult with an Elliott School advisor and officially declare both majors on the appropriate form available in the Student Services office.

Students may combine a major field in the Elliott School with a second major field offered by the Columbian College of Arts and Sciences or the School of Engineering and Applied Science, as long as the other major is toward a B.A. (majors in Communication and in the School of Media and Public Affairs are excluded). Permission for the second major must be obtained from the appropriate administrative office of the other school.

Students in the Columbian College of Arts and Sciences, whether pursuing a B.A. or a B.S. major, may also take a second major in the Elliott School. Students in the School of Engineering and Applied Science pursuing a B.A. may take a second major in the Elliott School. Students wishing to pursue these options must request approval through the Elliott School Student Services office. Students must complete all of their degree requirements for their major in their home school in order to graduate with a second major from the other school.

Regulations on Study Abroad

Students are encouraged to travel and study abroad. Those wishing to study abroad must consult their academic advisor and the University's Office for Study Abroad. A maximum of 45 credits may be transferred in from study abroad. GW courses taken abroad for GW credit do not apply to this maximum (i.e., specific courses taken through GW Study Centers and GW Summer Abroad for which students receive GW credit as opposed to transfer credit). Students must secure the dean's prior approval for any plan of study abroad if the credit earned is intended to apply to the degree program in which they are registered. Students must apply to a program from the University's List of Study Abroad Programs. A catalogue or other description of the study

abroad program must be presented for consideration together with detailed descriptions of the courses to be taken. See Study Abroad Programs.

Pass/No Pass Option

A student in the Elliott School of International Affairs who has a cumulative grade-point average of 2.5 or better may, with the approval of an advisor and the dean, take one course per semester and receive a grade of *P*, Pass, or *NP*, No Pass, which will be recorded on the student's transcript but will not be reflected in the cumulative grade average. A student must sign up for such an option at the Student Services office within the first eight weeks of classes. Under no circumstances may a student change from pass/no pass status to graded status, or vice versa, after the end of the eighth week of the semester. Required courses in the student's major (except those in which the grade of *P* or *NP* is normally assigned) may not be taken on a pass/no pass basis. A transfer student may not elect to take a course on a pass/no pass basis until the second semester of enrollment in the University. No more than six courses in which the grade of *P* or *NP* is assigned will apply toward the degree, including courses in which the grade of *P* or *NP* is normally given.

General Curriculum Requirements

General curriculum requirements for all Elliott School students are listed below. Requirements for the specific majors in international affairs, Latin American and hemispheric studies, Middle Eastern studies, and Asian studies are outlined under the appropriate heading in Courses of Instruction. For information on earning credit by examination or waiving curriculum requirements, students should see their academic advisor in the Elliott School.

All students take (1) 4 credits of UW 20; (2) 6 credits of math and/or science courses; (3) 9 credits of humanities or 6 credits of humanities and 3 credits of creative arts courses; (4) 16

credits of social science courses, including Econ 11–12, IAff 5, PSc 1, and one course chosen from Anth 2 or 4, Geog 1 or 2, or PSc 2; (5) 15 credits of courses relating to societies and cultures: two courses chosen from Hist 38, 40, 72 and a 3-credit course from three of the following regions: Africa, Asia, Americas, Europe/Eurasia, Middle East; (6) second-year level of proficiency in one foreign language should be attained by the end of the sophomore or junior year (see major field for additional language requirements). All Elliott School majors require third-year–level proficiency in a modern foreign language.

Students must consult the program guidelines available from the Elliott School Office of Academic Advising and Student Services before they choose courses to fulfill these requirements.

Secondary Fields of Study

Students can take a secondary field of study, such as business, economics, or languages, in other schools of the University. Students from other schools of the University can take a secondary field of study in international affairs in the Elliott School of International Affairs. See an academic advisor in the Elliott School.

SCHOOL OF PUBLIC HEALTH AND HEALTH SERVICES

Dean R.J. Katz

Associate Deans J.J. Reum, K.L. Hunting, J.G. Palen, R.T. Parkin

The School of Public Health and Health Services was established within The George Washington University in 1997. Seven departments form SPHHS: Environmental and Occupational Health, Epidemiology and Biostatistics, Exercise Science, Global Health, Health Policy, Health Services Management and Leadership, and Prevention and Community Health.

Degree programs offered by SPHHS include the Bachelor of Science with majors in athletic training, exercise science, and public health; the Master of Public Health; the Master of Health Services Administration; the Master of Science in the fields of exercise science, health policy, and public health microbiology and emerging infectious diseases; and the Doctor of Public Health. SPHHS cooperates with several other schools within GW in offering joint and dual degree programs. Secondary fields for undergraduates in schools other than SPHHS and graduate certificate programs are offered as well.

SPHHS Regulations—SPHHS regulations governing the following subjects are analogous to those of Columbian College of Arts and Sciences: residence; academic work load; academic standing (including probation, suspension, semester warning, and mid-semester warning); dean's lists; incompletes; pass/no pass option; earning an additional hour of credit; placement, waiver, and credit examinations; and second bachelor's degrees. See the section headed Columbian College of Arts and Sciences.

Bachelor of Science Degree Programs

Athletic Training

The Bachelor of Science with a major in athletic training is accredited by the Commission on Accreditation of Allied Health Education Programs. Graduates are prepared to take the National Athletic Training Association Board of Certification Examination.

The program prepares students for a range of careers in an allied health care profession responsible for the health care of athletes and other physically active individuals. Athletic trainers provide information on injury prevention, evaluate and treat athletic injuries, and provide other aspects of athletic health care.

Students may apply to enter the athletic training major upon completion of 30 credit hours with a minimum grade-point average of 2.5. Admission into the Athletic Training Education Program is selective and may be contingent upon availability of clinical practicum sites and approved clinical instructors. Students who wish to apply for admission to the major must meet the following requirements: complete the Athletic Training Education Program application; have prior athletic training observation experience; submit a personal essay; complete a personal interview; complete ExSc 50 Emergency Procedures and Safety Skills and ExSc 102 Introduction to Athletic Training with a minimum grade of *B* in each of the two courses; complete the Technical Standards form; and submit proof (or waiver) of hepatitis B vaccination, MMR vaccinations, and a TB test and proof of having passed a physical exam for the physical tasks involved in athletic training. Students should expect additional expenses due to required practicum travel.

Transfer students must meet all of the above criteria for admission into the Athletic Training Education Program. Transfer credit from other institutions will be evaluated by departmental faculty for acceptance by the School of Public Health and Health Services.

The degree program requires 124 credit hours, with 45 credits of general curriculum courses: the University Writing requirements; BiSc 13–14; an approved math course; Psyc 1; PubH 101 or 102 or 103; Stat 53; a course chosen from SpHr 11 or Comm 40 or 41 or 42; two additional approved courses chosen from the social and behavioral sciences; and two approved courses chosen from the humanities.

Required courses in the athletic training major are 74 credit hours: ExSc 50, 102, 109, 110, 126, 134, 137, 141, 142, 145 or 146, 151, 152, 154–55, 158, 159, 160, 161, 162, 163, 164, 168, 169, and 171.

In addition to School of Public Health and Health Services regulations, students must maintain a 2.5 overall GPA and show timely progress toward the degree.

Exercise Science

The Bachelor of Science with a major in exercise science prepares students for careers in health promotion, corporate fitness and wellness programs, exercise physiology, personal training, exercise rehabilitation, and coaching, as well as graduate study in exercise science, sport psychology, physical therapy, medicine, and other clinical health professions.

The 124-credit-hour program requires the general curriculum courses listed directly above with the athletic training major, an exercise science core, courses in the concentration, and electives as necessary to complete the degree program.

The 43-credit exercise science core consists of ExSc 50, 103, 109, 110, 134, 140, 151, 152, 154–55, 158, 171, and 175.

Students in the exercise science program select either the health and fitness concentration or the pre-health professional concentration, typically by the sophomore year.

Health and Fitness Concentration—24 credit hours: ExSc 121, 123, 138, 142; PubH 103; and three courses chosen from ExSc 105, 120, 125, 133, 136, 145, 146, or designated offerings of ExSc 101.

Pre-Health Professional Concentration—28 credit hours chosen in accordance with the intended professional field. For those preparing to apply to a physical therapy program: ExSc 159, 168, 169; Phys 1–2; Chem 11–12. For those preparing to apply to nursing, physician assistant, or M.D. programs: ExSc 159; Phys 1–2; Chem 11–12, 151–52, 153–54.

Public Health

The Bachelor of Science with a major in public health aims to increase understanding of public health principles for students who intend graduate study toward careers in law, medicine or another health profession, or public health. The program is also available to students who plan to pursue entry-level jobs in sectors of public health or health services. With a liberal arts base, the program emphasizes technical detail and analytic skills, nurturing critical thinking and synthesis of information in recognizing historical and societal associations of trends in public health and health care delivery.

Students may apply to enter the 120-credit-hour public health major upon completion of 60 credits with a minimum grade-point average of 3.0. General curriculum requirements listed under Columbian College of Arts and Sciences must be completed, with the exception that a statistics course must be included in fulfillment of the quantitative and logical reasoning category. Required courses in the major are PubH 101, 102, 103, 105, 121, 132, 172, 180, 191, 195, and 6 credits of SPHHS electives chosen from specified courses with approval of the advisor. The remainder of the program may be a secondary field, a minor, or approved electives.

Secondary Fields of Study

Secondary fields of study in public health and in exercise science are available to undergraduates in other schools of the University. See the entries for Exercise Science and for Public Health in the course listings section for courses that pertain to these secondary fields. SPHHS students may choose a secondary field from Columbian College of Arts and Sciences, the Elliott School of International Affairs, or the Schools of Business, Engineering and Applied Science, or Medicine and Health Sciences.

SCHOOL OF MEDICINE AND HEALTH SCIENCES

Bachelor of Science in Health Sciences Degree Programs

The School of Medicine and Health Sciences offers programs to prepare health sciences professionals in selected disciplines, emphasizing the interdependent roles of the network of professionals who constitute the health care team.

In addition to the Bachelor of Science in Health Sciences degree programs listed below, certificate programs are offered in several areas—some in conjunction with degree programs, others freestanding. All undergraduate health sciences programs are designed for upper-division transfer students who have completed a minimum of 60 credit hours of specified course work at an accredited postsecondary institution.

The Bachelor of Science in Health Sciences may be earned via distance education with majors in clinical management and leadership and in clinical research administration. The didactic course work for the clinical laboratory science major and the concentration in emergency medical services management within the emergency health services major are also provided via distance education. Students must have specified hardware and software and meet the technical requirements outlined on the Distance Learning Programs website learn.gwumc.edu/hscidist/DE/techreq.htm.

For specific information on the content and requirements of the undergraduate degree programs described briefly below, see www.gwumc.edu/healthsci or contact the Office of Admissions, Health Sciences Programs, School of Medicine and Health Sciences, The George Washington University, Washington, D.C. 20037.

Pharmacogenomics

The field of pharmacogenomics is emerging as more is learned about the genetic structure in the human body. Students enrolled in the pharmacogenomics major may apply for admission to the Doctor of Pharmacy degree program in Shenandoah University's Bernard J. Dunn School of

Pharmacy; students accepted for admission may be enrolled in the second year of Shenandoah's Pharm.D. program upon completion of their GW degree. Alternatively, graduates of the pharmacogenomics program are qualified to pursue a graduate degree or work in the biotechnology or pharmaceutical field.

Applicants to the 126-credit-hour major in pharmacogenomics must have a grade-point average of 3.0 in 60 credits of specified prerequisite courses. Requirements for the major include 21 credits of health sciences courses and 45 credits of specified basic science and pharmacogenomics courses.

Clinical Laboratory Science

Clinical laboratory scientists perform and evaluate various laboratory procedures to determine the absence, presence, extent, and basis of disease. As medical investigators, program graduates perform complex examinations on state-of-the-art instruments and computers in the areas of hematology, chemistry, microbiology, immunology, and blood banking.

Students applying to the 120-credit-hour clinical laboratory science program must have satisfactorily completed 65 credits in specified courses, complete a telephone interview, and submit letters of recommendation and an Essential Functions Acknowledgement Form. Once matriculated at GW, students must complete 55 credits in the major, including 15 credits of health sciences courses and 40 credits of specified clinical laboratory science courses. A comprehensive examination is required at the completion of all course work.

Emergency Health Services

Emergency health services personnel may plan and organize programs, supervise emergency department clinicians, assist in projects that require expertise in emergency medical procedures, and function in the network of information systems that is central to emergency care.

All applicants to the emergency health services major must hold certification as an Emergency Medical Technician. Where applicable, the following records should be provided: proof of current participation in an emergency medical services system and photocopies of scores or certificates from national registry examinations or certifying board examinations. Before the first day of classes, students admitted to the emergency paramedicine concentration must submit documentation from a physician attesting to their ability to satisfy the Functional Job Requirements of a Paramedic and must provide proof of immunizations as required by the program prior to the first day of class.

The program requires 126 credit hours, including 60 credits in specified prerequisite courses, 15 credits of health sciences courses, and 51 credits of emergency health services courses specific to a selected concentration either in emergency paramedicine or EMS management.

Clinical Management and Leadership

The major in clinical management and leadership has been developed for health care professionals prepared at the associate's degree level (e.g., radiographers, respiratory therapists, nurses, medical laboratory technicians) to broaden knowledge and experience in the management and leadership of health sciences services and develop pathways for career advancement.

Applicants must submit documentation of an associate's degree or equivalent preparation in a health sciences discipline and current professional certification or other appropriate health science credential. The 123-credit-hour degree program includes 30 credits of general education courses, 15 credits in general health sciences courses, and 18 credits of courses specific to the major.

Clinical Research Administration

Clinical research administration is a large and expanding field that involves the processes in which products (drugs, devices, biologicals) and treatment protocols are developed for patient care. This major prepares health sciences professionals to participate in the science and business of developing these patient care products and protocols.

Applicants must submit documentation of completion of at least 60 credit hours of college-level course work and current professional certification or other appropriate health sciences credentials. The 124-credit-hour degree program includes 30 credits of general education courses, 15 credits in general health sciences courses, and 19 credits of courses specific to the major.

Sonography

Using ultrasound technology, diagnostic medical sonographers scan patients to obtain images that help physicians diagnose disease. Students in the bachelor's degree program develop competencies in at least four subspecialties of ultrasound imaging.

Students applying to the 128-credit-hour sonography program must have satisfactorily completed 60 credits in specified course work, of which up to 48 credits may be from completion of an approved program in diagnostic radiology, nuclear medicine technology, radiation therapy technology, or diagnostic medical sonography, provided students hold or will hold current registration during the first semester of study at The George Washington University. In addition to 15 credits of health sciences courses, students must complete 53 credits of specified sonography courses.

See Health Sciences in the course listings section for courses that pertain to a secondary field in that subject, offered by the School of Medicine and Health Sciences. A secondary field in emergency health services is offered as well.

The Doctor of Medicine Early Selection Program

The School of Medicine and Health Sciences offers an early selection program intended to give talented and committed students early assurance of admission to the M.D. program. Students of exceptional promise are chosen for the early selection program at the end of their sophomore year and are expected to modify their planned curriculum for the junior and senior years toward more creative and difficult course choices. Early assurance of admission is planned to provide students the freedom to pursue a rigorous liberal education, while completing minimal premedical requirements without concern for the grade-point average. Specific details about the early selection program are available through the Office of Admissions of the School of Medicine and Health Sciences.

Courses

COURSES OF INSTRUCTION

This section provides listings and descriptions of undergraduate courses offered by the departments and programs of the GW schools included in this Bulletin. Degree requirements of departments and programs in Columbian College of Arts and Sciences and the Elliott School of International Affairs appear under the department or program heading; degree requirements of the School of Engineering and Applied Science, the School of Business, and the School of Public Health and Health Services appear under the respective school's section.

The number of credit hours given for the satisfactory completion of a course is indicated in parentheses after the title of the course. An academic-year course giving 3 credits each semester is marked (3–3). A credit hour may be defined as one 50-minute period of class work or one laboratory period a week for one semester.

Many course descriptions indicate the semester (fall or spring) for which the course is likely to be scheduled. The term *academic year* is used only with two-semester courses and indicates that the first half of the course is to be offered in the fall semester and the second half in the spring semester. Few offerings for the summer sessions are listed in this Bulletin; consult www.gwu.edu/summer for additional summer offerings. Schedules of Classes are available online at www.gwu.edu/~schedule.

The courses as listed here are subject to change. The University reserves the right to withdraw any course announced or to change the course fees shown.

Key to Abbreviations

The following abbreviations are used for course designations. (The list excludes designations for courses limited to students in the School of Medicine and Health Sciences.)

Accy	Accountancy
AmSt	American Studies
Anat	Anatomy
Anth	Anthropology
ApSc	Applied Science
Arab	Arabic
AH	Art History
ArTh	Art Therapy
Astr	Astronomy
Bioc	Biochemistry
BiSc	Biological Sciences
BmSc	Biomedical Sciences
Bios	Biostatistics
BAdm	Business Administration
Chem	Chemistry
Chin	Chinese
CE	Civil Engineering
Clas	Classical Studies
CCAS	Columbian College of Arts and Sciences
Comm	Communication
CSci	Computer Science
Cnsl	Counseling
EES	Earth and Environmental Sciences

Econ	Economics
Educ	Educational Leadership
ECE	Electrical and Computer Engineering
EHS	Emergency Health Services
EMSE	Engineering Management and Systems Engineering
Engl	English
EFL	English as a Foreign Language
EnRP	Environmental and Resource Policy
Epid	Epidemiology
EMBA	Executive Master of Business Administration
ExSA	Exercise and Sport Activities
ExSc	Exercise Science
Film	Film Studies
Fina	Finance
FA	Fine Arts
ForS	Forensic Sciences
Fren	French
Geog	Geography
Ger	German Language and Literature
GreK	Greek
PSHC	Health Care Corporate Compliance
HSci	Health Sciences
HSML	Health Services Management and Leadership

Hebr	Hebrew
Hist	History
HomP	Hominid Paleobiology
Honr	Honors
HDev	Human Development
HRD	Human Resource Development
HmSc	Human Sciences
HmSr	Human Services
Hmn	Humanities
IAff	International Affairs
IBus	International Business
Ital	Italian
Japn	Japanese
Kor	Korean
PSLD	Landscape Design
Latn	Latin
Law	Law
PSLM	Law Firm Management
Ling	Linguistics
Mgt	Management Science
Mktg	Marketing
MBAd	Master of Business Administration
Math	Mathematics

MAE	Mechanical and Aerospace Engineering
Micr	Microbiology and Immunology
MMed	Molecular Medicine
MStd	Museum Studies
Mus	Music
NSc	Naval Science
OrSc	Organizational Sciences
Path	Pathology
PStd	Peace Studies
Phar	Pharmacology
Phil	Philosophy
Phys	Physics
Phyl	Physiology
PMgt	Political Management
PPsy	Political Psychology
PSc	Political Science
Port	Portuguese
PsyD	Professional Psychology
Psyc	Psychology
PAd	Public Administration
PubH	Public Health
PSPL	Public Leadership
PPol	Public Policy

PSPB	Publishing
Rel	Religion
Rom	Romance Literatures
SEAS	School of Engineering and Applied Science
SMPA	School of Media and Public Affairs
SLP	Service–Learning Program
Slav	Slavic Languages and Literatures
Soc	Sociology
Span	Spanish
SpEd	Special Education
SpHr	Speech and Hearing
Stat	Statistics
SMPP	Strategic Management and Public Policy
TrEd	Teacher Education
TrDa	Theatre and Dance
TStd	Tourism Studies
Univ	University
UW	University Writing
Viet	Vietnamese
WLP	Women’s Leadership Programs
WStu	Women’s Studies
Ydsh	Yiddish

Explanation of Course Numbers

Courses numbered through the 100s are intended for undergraduates. Numbers up to 100 generally indicate courses for freshmen and sophomores; these courses may not be taken for credit by graduate students. Numbers in the 100s indicate courses planned for juniors and seniors; with approval of the dean and instructor, the courses may be taken for graduate credit provided that approval has been received before registering and that additional course work is assigned and completed.

Courses numbered in the 200s and 300s are intended for graduate students; the courses may be taken by qualified juniors and seniors with approval of the instructor. A few courses are numbered in the 400s and 800s to set them apart for administrative reasons; the courses are often analogous to courses numbered in the 200s.

Courses numbered 701, 721, and 751 represent an ongoing program of curriculum innovation at GW. Courses numbered in the 770s and 780s are taught by scholars who hold appointments as University Professors. The 700 numbers do not indicate the level of difficulty.

ACCOUNTANCY

Professors C.M. Paik, D.R. Sheldon, W.R. Baber, K.R. Kumar, S.H. Kang

Associate Professors L.G. Singleton, K.E. Smith (*Chair*), L.C. Moersen, F. Lindahl

Assistant Professors C.L. Jones, R.L. Tarpley, L. Liang, S. Hansen, M. Sullivan

Professorial Lecturers P. Ben-Ezra, A. Keyso, R. Laycock, D. McNamee, W. Stromsem, T.

Vergheze, G. White, M. Yahye-Zadeh

Associate Professorial Lecturers M. Cathey, R. Kasmir

See the School of Business for the program of study leading to the degree of Bachelor of Accountancy.

The fundamental concepts underlying financial statements and the informed use of accounting information. Analysis and recording of business transactions; preparation and understanding of financial statements. Measurement of the profitability and financial position of a business. Same as BAdm 51. Prerequisite: sophomore standing. (Fall and spring)

52 **Introductory Managerial Accounting (3)** Paik, Sullivan, and Staff

The use of accounting information to plan and control the activities of a business.

Several widely used methods of determining the cost of business activities for use in making business decisions. The statement of cash flows. Same as BAdm 52.

Prerequisite: Accy/BAdm 51. (Fall and spring)

110 **Financial Statement Analysis (3)** Hansen, Jones

Introduction to the analysis and interpretation of corporate financial statements within the context of a company's industry and economic environment. Cash flow analysis, profitability and risk analysis, accounting policy analysis, forecasting and performance analysis, elements of equity valuation, and decision perspectives of creditors.

Prerequisite: Accy/BAdm 52. (Fall and spring)

121 **Intermediate Accounting I (3)** Singleton

Accounting principles underlying the preparation of financial statements and their application in the measurement and reporting of selected balance sheet items and related revenue and expense recognition; accounting for receivables, inventories, fixed assets, intangible assets, and liabilities. Prerequisite: Accy/BAdm 51. (Fall)

122 **Intermediate Accounting II (3)** Singleton

Accounting for stockholders' equity, earnings per share, debt and equity investments, income taxes, pensions and other postretirement benefits, leases, accounting changes, statement of cash flows, financial statement analysis and disclosure. Prerequisite:

Accy/BAdm 51. (Spring)

151 **Business Law: Contracts, Torts, and Property (3)** Moersen

Essential legal principles of contracts, torts, and property, including trusts and estates, leases, professional liability, and the Uniform Commercial Code. Prerequisite:

Accy/BAdm 51. (Fall)

152 **Business Law: Enterprise Organization (3)** Moersen

The legal aspects of organizing, financing, and operating an enterprise: agency, partnerships, corporations, securities regulation, insurance, secured credit financing, and commercial paper. Prerequisite: Accy/BAdm 51. (Spring)

153 **Business Law: Regulatory Environment of Business (3)** Kane

General overview of the legal system, role of law, and business regulation. Specific business applications include administrative law, antitrust, employer and consumer obligations, securities regulation, international law. (Fall and spring)

161 **Federal Income Taxation (3)** Smith

A study of federal income tax concepts, including what shall be taxed, and when, and at what rate. Taxable entities, income measurement, the use of different tax rates for different types of income, and the use of the tax laws to motivate taxpayer behavior to achieve economic goals. Prerequisite: Accy/BAdm 51. (Fall)

171 **Auditing (3)** Staff

A study of generally accepted auditing standards, accepted professional auditing practices and procedures, and governmental auditing standards, including reviewing and evaluating financial controls, auditing financial statements, and testing financial data of manual and automated accounting systems. Prerequisite: Accy 122. (Fall)

181 **Accounting Systems (3)** Staff

Introduction to the design and operation of accounting systems and data-management controls. Principles and applications of internal control applicable to manual and automated accounting systems. Prerequisite: Accy 122. (Fall)

190 **Special Topics (3)** Staff

Experimental offering; new course topics and teaching methods. Prerequisite: department approval.

192 **Advanced Financial and Tax Accounting (3)** Smith

Accounting for partnerships and corporations. Formation, operation, and liquidation of each type of entity, including corporate combinations. Both financial and tax accounting for each type of transaction. Prerequisite: Accy 121, 161. (Spring)

193 **Advanced Managerial Accounting (3)** Staff

Techniques and practices that foster an informed use of financial information for planning, resource allocation, performance evaluation, and control purposes.

Integration of concepts from other disciplines, especially economics, quantitative methods, behavioral science, and business policy and strategy. Primarily taught using case method. Prerequisite: Accy/BAdm 52. (Spring)

196 **Financial Accounting Capstone (3)** Jones

Synthesis and application of knowledge of financial accounting to specific contexts, using the perspectives of the preparer and user of financial statements. Prerequisite: senior status. (Spring)

199 **Independent Study (3)** Staff

Assigned topics. Admission by permission of the department chair. (Fall and spring)

AFRICANA STUDIES

Committee on Africana Studies

J.A. Miller (*Director*), A. Alexander, N. Blyden, A. Brooks, F. Buntman, Y. Captain, J.

Hampton, J. Horton, J. James, K. Lornell, D. Moshenberg, P. Palmer, J. Vlach, G. Wald, A. Zimmerman

Minor in Africana studies—Offered through Columbian College of Arts and Sciences, the interdisciplinary minor consists of 21 credit hours, including a four-course core of Anth 178, AmSt/Hist 173, Hmn 7, and either Hist 116 or Anth 181, plus three additional courses selected either from African or African American courses, as listed below. Special topics or 700 courses that pertain may be selected with approval of the advisor.

AmSt/Hist 173 *African American History*

AmSt 174 *Special Topics in African American History*

Anth 170 *Cultures of the Caribbean*

Anth 178 *Cultures of Africa*

Anth 181 *African Roots from Australopithecus to Zimbabwe*

Engl 169 *Ethnicity and Place in American Literature*

Engl 183 *Literature of Black America I*

Engl 184 *Literature of Black America II*

Engl 185	<i>Topics in African American Literary Studies</i>
Engl 186	<i>Cultural Theory and Black Studies</i>
Geog 164	<i>Geography of Africa</i>
Hist 116	<i>History of Africa</i>
Hist 184	<i>Civil War and Reconstruction</i>
Hmn 7	<i>African Humanities</i>
IAff 93	<i>Africa: Problems and Prospects</i>
Phil 125	<i>Philosophy of Race and Gender</i>
PSc 182	<i>African International Politics</i>
PSc 186	<i>U.S. Policies Toward Sub-Saharan Africa</i>
Soc 179	<i>Race and Minority Relations</i>

AMERICAN STUDIES

Professors J.O. Horton, J.M. Vlach, R.W. Longstreth, J.A. Miller, P.M. Palmer (*Chair*), M.

Knight

Associate Professors T.A. Murphy, M. McAlister

Assistant Professors C. Heap, T. Guglielmo, J.K. Kosek

Adjunct Associate Professors E. Mayo, P.J. Cressey

Associate Professorial Lecturers R.D. Wagner, O. Ridout, F. Goodyear

Bachelor of Arts with a major in American studies—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—AmSt 71–72 or Hist 71–72 or equivalent.

3. Required courses in related areas—Two semesters of foreign language or placement into a Level Three foreign language by examination; also, one course about a foreign culture selected from the CCAS list of foreign cultures or approved by the Department.

4. Requirements for the major—two 100-level U.S. history courses (one with a significant focus on the pre-20th century, the other primarily focused on the 20th century); AmSt 168, 179–180, and five courses in the student's concentration. Areas of concentration are a) diversity and difference; b) the built environment and urban and regional spaces; and c) cultural analysis. A list of appropriate courses for each concentration is maintained by the department. At least two of the five courses in the area of concentration must be cross-listed in American studies.

In all cases of AmSt courses that are cross-listed with other University departments, students may register for the course in either department. With approval, other pertinent upper-level courses may be used to fulfill group requirements, including Topics courses on appropriate subjects.

Five-Year Bachelor of Arts with a major in American studies and Master of Arts in the field of American studies or in the field of American studies with a concentration in historic preservation—Students interested in these dual degree programs should consult the department before the beginning of the junior year.

Special Honors—For Special Honors in American studies, a major must meet the special honors requirements stated under University Regulations, be recommended by the faculty, and receive a grade of *A* on the senior paper, which is written as part of AmSt 180.

Minor in American studies—Required: 18 credit hours of 100-level courses, including AmSt 167 or 168, and two 100-level U.S. history courses, one of which is focused primarily on pre-20th century and the other primarily on 20th-century material.

- 50 **Washington, D.C.: History, Culture, and Politics (3)** Staff
- Introduction to interdisciplinary methods of studying the contemporary city. Major problems of metropolitan life, past and present, analyzed by faculty and community leaders. Emphasis on experiential team projects. (Fall)
- 71–72 **Introduction to American Studies (3–3)** Murphy, Palmer, McAlister
- Themes and issues in American civilization since Colonial times, with emphasis on their contemporary importance. (Academic year)
- 130 **Sexuality in U.S. History (3)** Heap
- Examination of the changing social organization and meaning of sexual practices and desires in American culture, with particular attention to the relationship between sexuality and gendered racial and class identities and politics. Same as Hist/WStu 130.
- 139–40 **Women in the United States (3–3)** Harrison, Murphy
- Survey of women’s experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. Same as Hist/WStu 139–40. (Academic year)
- 144 **Explorations in Historical Geography (3)** Staff
- Examination of selected themes in the cultural geography of the United States over the course of its history, in relation to an overview of the historical geography of the country. Same as Geog 144. (Spring)
- 145 **Folk Arts in America (3)** Vlach
- Ceramics, woodcarving, ironwork, decorative painting, weaving, and other crafts.
- Same as AH 156.
- 160 **Material Culture in America (3)** Vlach

Review and analysis of the cultural messages embedded in our material surroundings.

Consideration of a range of humanly created artifacts, ranging from specific objects to vast landscapes. Same as Anth 130.

165 **Introduction to Folklore (3)** Vlach

Survey of the forms of folk expression, including verbal art, music, dance, and material culture. Examination of the materials and methods of folklore research. Same as Anth 192.

167 **Themes in U.S. Cultural History (3)** McAlister, Kosek

An examination of the special ideas, values, and modes of expression that have made American life distinctive, as revealed through a variety of sources, including fiction, popular media, photography and the arts, and material culture. May be repeated for credit provided the topic differs. Same as Hist 167.

168 **Cultural Criticism in America (3)** McAlister, Heap

A variety of approaches to cultural criticism, encompassing the nature of aesthetic accomplishment as well as the social contexts that alter and enrich the shape of cultural expression. The significance of culture to politics, social life, and the development of individual and collective identities. Limited to majors.(Fall and spring)

171–72 **U.S. Social History (3–3)** Horton, Stott

AmSt 171: Daily life, institutions, intellectual and artistic achievements of the agrarian era, 1607–1861. AmSt 172: The urban–industrial era from 1861 to present. Same as Hist 171–72. (Academic year)

173 **African American History (3)** Alexander

Same as Hist 173.

174 Special Topics in African American History (3) Horton

Concentration on specific issues central to the African American experience. Consult the Schedule of Classes for issues to be addressed.

175–76 American Architecture (3–3) Longstreth

Stylistic properties, form and type characteristics, technological developments, and urbanistic patterns are introduced as a means of interpretation of historic meaning.

Buildings are analyzed both as artifacts and as signifiers of social, cultural, and economic tendencies. AmSt 175: 1600–1860; AmSt 176: 1860–present. Same as AH 154–55. (Academic year)

179 Practicum in American Studies (3) Staff

For American studies majors in their senior year. Supervised assignments in public or private agencies engaged in the investigation, interpretation, or conservation of the social, material, and expressive elements that constitute American culture. Biweekly seminar on campus. Graded P/NP only. (Fall)

180 Proseminar in American Studies (3) Staff

For American studies majors in their senior year. Directed research and writing in preparation for public symposium at the end of the academic year.

(Spring)

181 U.S. Media and Cultural History (3) McAlister

History and analysis of 20th-century U.S. media and culture, including the rise of consumer culture, film, and television. Racial, gendered, and national identities in the context of modernism, mass culture, and globalization. Same as Hist 181.

185 Black Women in U.S. History (3) Alexander

Same as Hist/WStu 185.

- 186 **U.S. Urban History** (3) Stott, Heap

History of American urban life and culture from the colonial era to the present, focusing on transitions from pre-industrial to industrial and post-industrial forms. The social and spatial configuration of U.S. cities, and the urban politics of race, class, and gender. Same as Hist 186. (Fall)

- 187 **Building Cities** (3) Staff

Same as Geog 187.

- 192 **The American Cinema** (3) Staff

History and criticism of American films. The course will enable the student to recognize and evaluate cinema techniques, to express the evaluation clearly in writing, and to understand the role of films in the context of American culture. Same as AH 157. (Spring)

- 193 **Archaeology Field/Laboratory Research** (3) Brooks

Same as Anth 113.

- 194 **Historical Archaeology** (3) Staff

Same as Anth 187.

- 195 **Independent Study** (1 to 3) Staff

Open to a limited number of American studies majors as directed research or as an internship with a Washington museum or historical society. Approval of advisor required. (Fall and spring)

- 198 **Special Topics** (3) Staff

May be repeated for credit provided the topic differs. Admission by permission of instructor.

ANTHROPOLOGY

Professors A.S. Brooks (*Chair*), C.J. Allen, J.M. Vlach, D. Gow, B. Wood, J.C. Kuipers, B.D.

Miller, D. Bell, R.R. Grinker, W.J. Frawley, P.W. Lucas

Associate Professors E.H. Cline, M. Edberg

Assistant Professors S.C. Lubkemann, B.G. Richmond, R.M. Bernstein, A.S. Dent, J. Blomster

Adjunct Associate Professor P.J. Cressey

Professorial Lecturers D.H. Ubelaker, R. Potts, G. Teleki, R. Shepherd

Associate Professorial Lecturers J. Love, R. Albro

Assistant Professorial Lecturers S. Johnston

Bachelor of Arts with a major in anthropology—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Anth 1, 2, 3, and 4.
3. Required courses in other areas—(a) two-year proficiency in French, German, Russian, or Spanish (or another language approved by the Anthropology Department); (b) 6–12 credit hours of course work in related departments approved by the advisor. Recommended for sociocultural emphasis are courses in economics, history, political science, psychology, religion, and sociology; for archaeological emphasis, courses in American studies, art history, geography, geology, and history; for emphasis in biological anthropology, courses in anatomy and biological sciences; for emphasis in linguistic anthropology, courses in linguistics and in speech and hearing. Courses in statistics are strongly recommended for all anthropology majors.

4. Requirements for the major—In addition to the four prerequisite courses, 24–36 credit hours in anthropology courses, including Anth 198 and at least one course from each of the following five categories: aspects of culture (courses in the 150s as well as 117, 121, 130, 191, 192, and 193); linguistics (the 160s); ethnology (the 170s); biological anthropology (the 140s and 5); and archaeology (the 180s and 113, 114, 116). Qualified seniors may enroll in 200-level seminar courses with the permission of the instructor. See the Graduate Programs Bulletin. Up to 6 credit hours of ethnographic or archaeological field school credit may be accepted and applied toward the major, if approved by the department, and majors are encouraged to participate in such programs. Opportunities are available for field and laboratory research, both within the department and as internships in the Washington area. Credit for such work (not to exceed one-quarter of the student's total second-group credit hours in anthropology) may be granted through registration in Anth 195.

Bachelor of Arts with a major in archaeology—An interdepartmental major offered by the Anthropology Department in cooperation with the Fine Arts and Art History Department and the Classical and Semitic Languages and Literatures Department. The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite course—Anth 3.
3. Required courses in other areas—12 hours or equivalent in French, Spanish, Italian, German, Arabic, Hebrew, Latin, or Greek. Since graduate study in archaeology usually involves broader preparation and requires knowledge of at least one classical and one modern language, students intending to pursue graduate study should consult with the departmental advisor as early as possible in their undergraduate programs.

4. Requirements for the major—(a) Anth 118; (b) 3 hours of field and laboratory work chosen from Anth 113, 114, 116, 195, 284, 286; (c) 12 hours of anthropological archaeology courses chosen from the Anth 180s; (d) 15 hours, including at least one course chosen from each of the following four groups: (1) AH 101, 102, 160; (2) Clas 71, 72, 107, 108; (3) Hist 107, 108, 109, 110; (4) AH 104, 117, 118, Anth 188/AH 106 (the last course may be applied only once toward the major); (e) 3 additional hours selected from the courses listed above or, with approval of the advisor, a related course in anthropology, art history, classics, or history.

Bachelor of Science with a major in biological anthropology—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Anth 1, 2, 3, and 4; BiSc 13–14.
3. Required courses—12 credit hours in biological anthropology and Paleolithic archaeology (Anth 5, 114, 141–149, 181, 183); 8 credit hours of approved 100-level BiSc courses; a minimum of 3 credit hours in a related natural or physical science or mathematics; 6 credit hours of sociocultural or linguistic anthropology (all other Anth courses except those in the 180s). The major in biological anthropology may not be pursued in conjunction with the major in anthropology.

Five-Year Bachelor of Arts with a major in anthropology or Bachelor of Science with a major in biological anthropology and Master of Arts in the field of anthropology—Students interested in the dual degree program should consult the department before the beginning of the junior year.

Special Honors—For Special Honors in anthropology, archaeology, or biological anthropology, a major must meet the special honors requirements stated under University Regulations, register for 3 credit hours of Anth 195, Undergraduate Research, and write a paper

of special distinction arising out of a program of directed reading or research. Students must confer with an advisor before beginning the work.

Minor in general anthropology—21 credit hours are required, including Anth 1, 2, 3, 4, and three additional courses in anthropology, which must be taken in different subdisciplines. For the purposes of this minor, the department's courses may be divided into subdisciplines as follows: biological anthropology—courses in the 140s and 5; archaeology—courses in the 180s and 113; anthropological linguistics—the 160s; sociocultural anthropology—all other 100-level courses, with the exception of Anth 195 and 196, in which the topic is variable.

Minor in archaeology—18 credit hours are required, including Anth 3, 118, and four courses chosen from Anth 113, 114, 116, 180–189, 286. An independent study course in archaeology or an approved art history course may be substituted for one of the four courses.

Minor in biological anthropology—16–19 credit hours are required, including Anth 1 and 9 credits chosen from Anth 5, 141–149; an approved field or research course or an approved course or course sequence in a related field (including biological sciences, geology, psychology, statistics, and certain other disciplines).

Minor in sociocultural anthropology—18 credit hours are required, including Anth 2; one course in ethnography (Anth 170–179); four courses in aspects of culture or methods and theory (Anth 117, 121, 130, 150–159, 191, 192, 193, 198).

Minor in cross-cultural communication—18 credit hours are required, including Anth 2 or 4, 161, 162; Anth 150 or 159; one course in ethnography (Anth 170–179); one course chosen from Anth 153, 154, 155, 158, 163, 168, 169, 192, or 193.

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

1

Biological Anthropology (4)

Richmond and Staff

Survey of human evolution, genetics and physical variation, and primatology. Regular laboratory exercises. Laboratory fee, \$40. (Fall and spring)

2

Sociocultural Anthropology (3)

Grinker, Miller, and Staff

Survey of the world's cultures, illustrating the principles of cultural behavior. (Fall and spring)

3

Archaeology (3)

Cline and Staff

Introduction to archaeological survey and excavation techniques and laboratory methods of dating and analysis. Brief history of archaeology and survey of world prehistory. Films and laboratory exercises. (Fall and spring)

4

Language in Culture and Society (3)

Kuipers

Comparison and analysis of how cultures use language to communicate. The relationship of language to issues of human nature, gender, race, class, artistic expression, and power. Laboratory fee, \$20. (Spring)

The Biological Bases of Human Behavior (4)

Richmond, Bernstein

Human behavior from an evolutionary perspective, including issues such as communication, intelligence, reproductive behavior, parental behavior, aggression, and cooperation, and drawing on an understanding of the behavior and biology of the nonhuman primates. Laboratory fee, \$20. (Spring)

113 Archaeology Field/Laboratory Research (3) Brooks, Cressey

Field and/or laboratory techniques and interpretation. Topics may include excavation methods, recording photography, preservation, stratigraphy and environmental reconstruction, typology, ceramic analysis, use–wear analysis, and spatial analysis. Specific research area and topics announced in the *Summer Sessions Announcement*. Same as AmSt 193. (Summer)

114 Paleoanthropological Field Program (3 or 6) Brooks

Intensive course on field research in paleoanthropology, including excavation methods, identification and analysis of materials, paleoecology, archaeology, and human anatomy. Conducted at selected sites in Eurasia, Africa, or Australia. Visits to comparative sites and collections in the region. (Summer)

116 Mediterranean Field Program (3) Cline

Participation in archaeological field school. (Summer)

117 Methods in Sociocultural Anthropology (3) Kuipers, Edberg

Approaches to field research. Conceptual bases and biases in the delineation of problems and in the selection, analysis, and organization of data. Students will design and carry out their own field projects in the Washington area. Prerequisite: Anth 2. (Spring)

118 **Method and Theory in Archaeology (3)** Staff

Required seminar for archaeology majors on data collection, analysis, and interpretation.

Prerequisite: Anth 3. (Spring)

121 **The Anthropology of Gender: Cross-Cultural Perspectives (3)** Staff

Same as WStu 121.

130 **Material Culture in America (3)** Vlach

Same as AmSt 160.

141 **Functional Anatomy (3)** Richmond

The anatomy of the human body, how it works, and how it differs from other animals, especially other primates. Principles and approaches of functional morphology and biomechanics and how function can be reconstructed from fossils, with special focus on the musculoskeletal system. No prior knowledge of anatomy is required. Laboratory fee, \$50. Prerequisite: Anth 1. (Fall)

142 **Human Evolutionary Anatomy (3)** Lucas and Staff

The structure and function of human anatomy, as compared to our closest relatives, the great apes. Using this comparative approach, the course investigates the fossil record of human evolution, with an emphasis on reconstructing relationships, function, behavior, and adaptation in fossil hominids. Prerequisite: Anth 1. (Spring)

143 **Human and Growth and Development (3)** Bernstein

Modern human growth and development considered through an evolutionary perspective.

The growth stages and life cycles of modern humans, emphasizing physiological and environmental influences and comparisons with extant non-human primates and fossil hominids. Prerequisite: Anth 1. Laboratory fee, \$15. (Spring, alternate years)

145 **Forensic Anthropology Laboratory (2)** Ubelaker

Identification of human skeletal remains by body part, age, sex, race, and individual disease or trauma history; study of skeletal variation in modern and recent populations.

Taught at the Smithsonian. Corequisite: Anth 146. (Spring)

146 **Human Variation (1)** Ubelaker

An overview of human variation, with special emphasis on the skeleton. Includes history of physical anthropology, individual and population variations, archaeological recovery of human remains, paleodemography, growth, paleopathology, and forensic anthropology. Prerequisite: Anth 1; corequisite for undergraduates: Anth 145. (Spring)

147 **Hominin Evolution (3)** Wood

The fossil record of human evolution, including its context. Brief review of the fossil evidence that concentrates on the distinctive features of each taxon. Pleistocene remains. Laboratory fee, \$40. Prerequisite: Anth 1. (Fall)

148 **Primateology (3)** Staff

Physical and behavioral characteristics of the various primate groups and their relationship to human physical and cultural evolution. Prerequisite: Anth 1. (Fall)

149 **Topics in Biological Anthropology (3)** Wood and Staff

Topic announced in the *Schedule of Classes*. Instructors will be drawn from GW faculty and Smithsonian Institution staff. May be repeated for credit if topic varies.

150 **Human Rights and Ethics (3)** Lubkemann and Staff

Issues of basic human rights and their violation by different cultures, states, and organizations. Genocide, ecocide, abuses on the basis of ethnicity, religion, or similar factors, and the treatment of those seeking asylum. Rights of informants and groups studied in anthropological research. Prerequisite: Anth 2. (Spring)

151 **Development Anthropology (3)** Lubkemann

The impact of the world economy on nonindustrial societies. Analysis of the role of anthropology in international development programs aimed at alleviating problems in the Third World. Prerequisite: Anth 2. (Fall)

152 **Cultural Ecology (3)** Staff

Basic principles of cultural ecology. Human interaction with the ecosystem both past and present; emphasis on the application of anthropological precepts to current environmental problems.

153 **Psychological Anthropology (3)** Grinker

The cross-cultural study of the relationship between culture and personality. Topics include emotion, conceptions of the self, mental health and illness, sexuality, marriage and parenting, and cognition. Psychobiological, cultural, ecological, and psychoanalytical theories are examined. Prerequisite: Anth 2 or permission of instructor. (Spring, alternate years)

154 **Illness, Healing, and Culture (3)** Miller

Introduction to medical anthropology. What the record of human evolution and prehistory tells about human health; the epidemiology of health and illness; how different cultures define disease; understanding illness and healing systems cross-culturally; the political

economy of illness; and the role of medical anthropology in health care and international development.

155 Religion, Myth, and Magic (3)

Allen and Staff

Theories of religion developed by anthropologists; survey of world religions with emphasis on non-Western societies; religious processes and change. Same as Rel 155.

156 Politics, Ethnicity, and Nationalism (3)

Grinker

Comparative analysis of political systems; political processes, such as factionalism, styles of leadership, political ritual. Prerequisite: Anth 2 or permission of instructor. (Fall, alternate years)

157 Kinship, Family, and Community (3)

Grinker

Cross-cultural analysis of how people form, maintain, and transform social groups and boundaries. Focus on how communities such as family, ethnic group, and nation are defined in moral terms.

158 Art and Culture (3)

Allen

The role of art in culture, with emphasis on small-scale societies; influences upon the artist, and beliefs and practices associated with art production. Prerequisite: Anth 2 or permission of instructor.

159 Symbolic Anthropology (3)

Allen

The study of culture through the analysis of symbolic systems including myth, cosmology, folklore, art, ritual, political symbolism, and the symbolic study of kinship. Prerequisite: Anth 2 or permission of instructor.

161 Language, Culture, and Cognition (3)

Kuipers

The role of language and culture in the organization of human experience. Beginning with debates about linguistic relativity, the course explores the way language use shapes cognition and practice in a variety of cultures and social contexts. Prerequisite: Anth 4.

Laboratory fee, \$20. (Fall, alternate years)

162 Ethnographic Analysis of Speech (3) Kuipers

Linguistic variation and change in discourse practices; social and political correlates of linguistic interaction; recording, transcription, and analysis of verbal interaction.

Prerequisite: Anth 4. Laboratory fee, \$40. (Fall, alternate years)

163 Psycholinguistics (3) Frawley

Same as Ling 102.

168 Language and Linguistic Analysis (3) Staff

Same as Ling 101. (Spring)

169 Special Topics in Linguistic Anthropology (3) Kuipers and Staff

Topic announced in the *Schedule of Classes*. May be repeated for credit provided the topic differs.

170 Cultures of the Caribbean (3) Staff

Culture history and ways of life among the area's various cultural groups up to the ethnographic present. Prerequisite: Anth 2 or permission of instructor.

171 North American Native Peoples (3) Staff

Comparative study of Indian groups representative of the different culture areas of the United States and Canada. Contemporary issues involving indigenous groups, the wider society, and the state. Prerequisite: Anth 2 or permission of instructor. (Fall, alternate years)

172 **Cultures of Central and South America (3)** Allen and Staff

Culture history and ways of life in a selected region of Central or South America.

Regional focus to be announced in the *Schedule of Classes*. Prerequisite: Anth 2 or permission of instructor. (Fall, alternate years)

173 **Cultures of the Pacific (3)** Love

Culture history and ways of life among native peoples of Melanesia, Micronesia, and Polynesia. Prerequisite: Anth 2 or permission of instructor.

174 **Cultures of Southeast Asia (3)** Kuipers

Introduction to the history, art, ecology, and politics of Southeast Asia. Comparison and interpretation of recent ethnographic case studies, archaeological evidence, and current political events in order to understand the diversity of Southeast Asian traditions. (Spring, alternate years)

175 **Asian Ethnography (3)** Staff

Intensive study of the culture and history of selected peoples of East, Central, or South Asia. Specific area to be announced in the *Schedule of Classes*. May be repeated for credit. Prerequisite: Anth 2 or permission of instructor.

177 **Cultures of the Near East (3)** Staff

Geographic environment, language, religion, and social structure of settled and nomadic peoples of the Near East: emphasis on the Arab world. Prerequisite: Anth 2. (Fall)

178 **Cultures of Africa (3)** Grinker, Lubkemann

Comparative examination of the history, cultural development, and contemporary problems of sub-Saharan African cultures. New World African cultures are also considered. Prerequisite: Anth 2 or permission of instructor.

179 **Japanese Culture Through Film (3)** Hamano

Same as Japn 162. (Spring)

180 **Ethnohistory (3)** Staff

Reconstruction of the history of a selected preliterate society through the analysis of historical documents, oral traditions, archaeological remains, and other indirect sources.

Specific topic to be announced in the *Schedule of Classes*.

181 **African Roots from *Australopithecus* to Zimbabwe (3)** Brooks

The development and contributions of Africa from human beginnings through medieval states. Topics include human evolution, origins of art, technology, trade, and animal/plant domestication, rise of African states, early relations with Europe and Asia, antecedents of contemporary African diversity. Prerequisite: Engl 11 or 13. (Spring)

182 **Archaeology of North America (3)** Staff

History of American archaeology; survey of North American culture history from human entry into the Americas during the Pleistocene period until the time of the first European contacts. Focus on peoples north of Mexico. Prerequisite: Anth 3.

183 **Human Cultural Beginnings (3)** Brooks

Survey of prehistory in Europe, Africa, and Asia from the earliest hominid cultures to the beginnings of agriculture. Prerequisite: Anth 3. (Fall)

184 **Rise of Old World States (3)** Cline and Staff

Survey of prehistory in the Near East, Egypt, Europe, and other areas, from the beginnings of agriculture to the rise of Babylon. Prerequisite: Anth 3.

(Spring)

185 **Archaeology of Middle and South America (3)** Blomster

Culture history of pre-Columbian Middle and South America from the Paleo-Indian period through the Spanish Conquest; in-depth study of a particular region. Prerequisite: Anth 3.

186 **The Origins of Civilization (3)** Staff

Emergence of urbanism and the state in the prehistory of different world regions.

Prerequisite: Anth 3.

187 **Historical Archaeology (3)** Cressey

Survey of the basic data and methods of research in the material culture of recent history.

Same as AmSt 194.

188 **Archaeology of Israel and Neighboring Lands (3)** Cline

The archaeology of Israel and adjacent areas (Syria, Jordan, Lebanon). Examination of many major sites and monuments. Significant problems and current debates. Same as AH 193. (Fall)

189 **Special Topics in Archaeology (3)** Staff

Topic announced in the *Schedule of Classes*. May be repeated for credit provided the topic differs.

190 **Cultures and Diasporas in the Americas (3)** Staff

Voluntarily and forcibly displaced and resettled peoples in the Americas, including the earliest settlers, slaves, immigrants, refugees, migrant workers, illegal aliens, tourists, and others are studied in local, transnational, and global contexts. Culture change and ethnic identity formation among resettled groups; repatriation. Prerequisite: Anth 2 or permission of instructor.

191 **Anthropology in Performance (3)** Garner, Allen

Exploration of the relationships among social interaction, ritual, and dramatic performance. Improvisation workshops and discussion based on readings about non-Western cultures. Same as TrDa 140.

192 **Introduction to Folklore (3)** Vlach

Survey of the forms of folk expression, including verbal art, music, dance, and material culture, and the interaction between folk forms and popular culture. Examination of the materials and methods of folklore research. Same as AmSt 165.

193 **Ethnographic Film (3)** Kuipers and Staff

Still and motion-picture photography as an integral aspect of anthropological research. A study of recent and historic ethnographic films and an introduction to the forms and methods of making visual ethnographic records. Prerequisite: Anth 2 or permission of instructor. Material fee, \$20.

195 **Undergraduate Research (arr.)** Staff

Individual research problems to be arranged with a member of the faculty. May be repeated for credit. Prerequisite: Appropriate introductory course or permission of instructor.

196 **Special Topics (3)** Staff

Courses offered by visiting faculty; experimental offerings. Topic to be announced in the *Schedule of Classes*. May be repeated for credit provided the topic differs.

198 **Foundations of Anthropology (3)** Allen, Grinker, Lubkemann

The development of anthropological thought as seen in historical context. Exploration of selected basic concepts and theories of contemporary anthropology. To be taken in the junior or senior year. Prerequisite: Anth 2. (Spring)

APPLIED SCIENCE

Interdepartmental course offerings in the School of Engineering and Applied Science.

1

Introduction to Engineering for Undeclared Majors (1)

Harrington

As an introduction to disciplines within SEAS, potential solutions to a simulated problem are presented by practitioners of civil and environmental engineering; computer science; electrical, computer, and biomedical engineering; mechanical and aerospace engineering; and systems engineering. The course culminates with integration of the solutions offered. (Fall)

57

Analytical Mechanics I (2)

Haque and Staff

First half of a one-year sequence. Concepts of statics: force systems, conditions of force and moment equilibrium, simple structures, distributed forces, centroids, internal forces, friction, moments of inertia. Prerequisite or concurrent registration: ApSc 113, Phys 21. (Fall and spring)

58

Analytical Mechanics II (3)

Haque, Chichka

Second half of a one-year sequence. Concepts of dynamics: kinematics of particles, velocity and acceleration, translating and rotating reference frames, particle dynamics, motion under central and electromagnetic force, effect of Earth's rotation, vibrations,

work, kinetic and potential energy, dynamics of systems of particles. Prerequisite: ApSc

57. (Fall and spring)

113 Engineering Analysis I (3)

Haque, Motevalli

Analytical methods for the solution of problems in engineering, the physical sciences, and applied mathematics: applications of ordinary differential equations, matrices and determinants, eigenvalues and eigenvectors, systems of ordinary linear differential equations, Bessel and Legendre functions. Prerequisite or concurrent registration: Math 33. (Fall and spring)

114 Engineering Analysis II (3)

Kahn and Staff

Analytical methods for the solution of problems in engineering, the physical sciences, and applied mathematics: complex variables, Fourier series and integral, frequency filters, Laplace transforms, inversion and Duhamel integrals; partial differential equations. Prerequisite: Math 33. (Fall and spring)

115 Engineering Analysis III (3)

van Dorp and Staff

Analytical methods for the solution of engineering problems using concepts from probability and statistics: probability modeling, random variables and their distributions, mathematical expectation, sampling, point and confidence interval estimation, hypothesis testing, correlation, regression, and engineering applications. Prerequisite: Math 32; UW 20. (Fall and spring)

116 Engineering Analysis IV (3)

Soland and Staff

Analytical methods using advanced concepts from probability and statistics: multivariate distributions, expectation, generating functions, parametric families of distributions,

sampling and sufficient statistics, estimation, hypothesis testing, and engineering applications. Prerequisite: ApSc 115, Math 33. May be taken for graduate credit. (Fall)

130 Materials Science (3) Gilmore

Structure of perfect and imperfect solids, thermodynamics of solids, reaction rate theory, electrons in solids, electron transport, electrical properties of junctions, magnetic materials, optical properties of materials. Prerequisite: Chem 11, Math 33, Phys 22. (Fall and spring)

199 Honors Research Project and Seminar (3) Staff

Student designs and carries out a research project under the supervision of a faculty advisor. Students from all engineering disciplines meet periodically to present projects and discuss results. Enrollment limited to students admitted to the Honors Research Program. May be repeated for credit.

ARABIC

See **Classical and Semitic Languages and Literatures**.

ARCHAEOLOGY

See **Anthropology**.

ART

See **Fine Arts and Art History**.

ASIAN STUDIES

Program Committee: S. McHale (*Director*), B. Dickson, S. Hamano, J. Kuipers, K. Larsen, E. McCord

The Elliott School of International Affairs offers a multidisciplinary program leading to a Bachelor of Arts with a major in Asian studies.

Bachelor of Arts with a major in Asian studies—The following requirements must be fulfilled.

1. The general curriculum requirements stated under the Elliott School of International Affairs.
2. Required courses for the major—IAff 91; Econ 169 or 170; three courses selected from Hist 101, 118, 187, 188, 189, 190, 196, or Geog 165; two courses selected from PSc 170, 173, 175, 190, or 192; one course in Asian literature; and three 100-level Asia-related courses, selected in consultation with the program director.
3. Completion of third-year-level language study in an approved Asian language.

Special Honors—In addition to the general requirements stated under University Regulations, a candidate for Special Honors in Asian studies must have attained a 3.4 grade-point average overall and complete either an Elliott School or Honors senior seminar or a senior thesis.

Students must apply for honors candidacy prior to the beginning of the senior year.

Students should consult the program guidelines available from the Elliott School for courses pertinent to Asian studies. Students should consult the program director concerning certain Special Topics or Selected Topics courses that may also be part of this program.

BIOLOGICAL SCIENCES

Professors R.K. Packer, R. Donaldson, J.R. Burns, D.L. Lipscomb, R.E. Knowlton, K.M. Brown

Associate Professors H. Merchant, D.E. Johnson, J.M. Clark (*Chair*), M.W. Allard, L.C. Smith,

F.J. Turano, E.F. Wells, G. Hormiga, P.S. Herendeen, R.P. Tollo

Assistant Professors D.W. Morris, P. Hernandez, J.T. Lill, S.A. Church

Associate Professorial Lecturer P.E. Spiegler

Bachelor of Arts with a major in biology—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—BiSc 13–14 or equivalent.

3. Required courses in related areas: Chem 11–12, 151–52, and 153–54. (The following courses are strongly recommended: Phys 1–2 or 21–22; 3 credit hours of either mathematics or statistics; two years of an approved foreign language.)

4. Required courses for the major—A minimum of 24 credit hours of 100-level courses, which must include at least 4 hours from each of the following: cell and molecular biology (BiSc 102 to 109, 112, 115), suborganismal and organismal biology (BiSc 114, 118, 120 to 142, 182), and ecology and evolution (BiSc 150 to 169).

Bachelor of Science with a major in biology—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—BiSc 13–14 or equivalent.
3. Required courses in related areas—Chem 11–12, 151–52, and 153–54; Phys 1–2 or 21–22; 3 credit hours of either mathematics or statistics (this requirement cannot be satisfied by waiver). Two years of an approved foreign language are strongly recommended but not required.

4. Required courses for the major—A minimum of 30 credit hours of 100-level courses, which must include at least 4 hours from each of the following and at least three courses with laboratory: cell and molecular biology (BiSc 102 to 109, 112, 115), suborganismal and organismal biology (BiSc 114, 118, 120 to 142, 182), and ecology and evolution (BiSc 150 to 169).

A maximum of 6 credit hours of research and independent study or graduate courses in biological sciences may be used as electives within the major.

Special Honors—In addition to the general requirements stated under University Regulations, in order to be considered for graduation with special honors, a student must maintain a cumulative 3.5 grade-point average in biological science courses and at least a 3.0 cumulative

overall grade-point average. Students who meet these criteria and wish to pursue special honors must complete an approved research project under faculty direction.

Minor in biology—12 credit hours of 100-level courses (excluding research and independent study).

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

Departmental prerequisite: BiSc 13–14 or equivalent is prerequisite to all 100-level courses except by permission of the instructor.

3

The Diversity of Life (3)

Staff

Lecture (2 hours), laboratory (2 hours). Characteristics of the living world, including evolution; diversity of plants, animals, and microorganisms; ecology and the biosphere; animal behavior; and the biology of the human body. For non-majors. Laboratory fee, \$65. (Fall)

4

The Building Blocks of Life (3)

Staff

Lecture (2 hours), laboratory (2 hours). The molecules and cells that make up the human organism, nutrition and metabolism, inheritance and genetic diseases, bacterial and viral infections, immunity, biotechnology in medicine and food, economics and politics of biology. For non-majors. Laboratory fee, \$65. (Spring).

13

Introductory Biology: The Biology of Organisms (4)

Wells, Burns

Lecture (3 hours), laboratory (3 hours). Concepts and methods in the study of whole organisms. Evolutionary theory; population biology; diversity of plants, animals, fungi, and microorganisms; ecology and behavior; and animal structure and function.

Laboratory fee, \$75. (Fall)

14

Introductory Biology: Cells and Molecules (4)

Brown, Donaldson

Lecture (3 hours), laboratory (3 hours). Nutrition and metabolism, cellular and developmental biology, genetics, and molecular biology of plants and animals.

Laboratory fee, \$80. (Spring)

102 **Cell Biology (3)**

Morris, Smith

Structure and function of biological molecules and cellular organelles; cellular interactions. Prerequisite: one semester of organic chemistry. (Fall and spring)

103 **Biochemistry (4)**

Vanderhoek

Introduction to structures of biological macromolecules, enzyme catalysis, cellular bioenergetics, and metabolism. Prerequisite: Chem 151–52. Same as Bioc 101 and Chem 161. (Fall)

104 **Biochemistry Laboratory (2)**

Vanderhoek

Study of common experimental techniques used in life science laboratories to separate and characterize biological macromolecules. Prerequisite: BiSc 103 or equivalent.

Laboratory fee, \$75. Same as Bioc 103 and Chem 163. (Spring)

105 **Plant Biochemistry** (3) Donaldson

Discussions of plant metabolism and molecular biology: photosynthesis, nitrogen metabolism, membrane transport, mechanisms of hormone action, protein targeting, biotechnology, and current research topics. Prerequisite: Chem 11–12. (Spring, even years)

106 **Special Topics in Biochemistry** (2) Vanderhoek, Donaldson, King

In-depth discussion of current biochemically relevant topics, including cancer and HIV chemotherapy, immune response, photosynthesis, signal transduction, hormone regulation and nutrition. Topics vary. Prerequisite: BiSc 103 or equivalent. Same as Bioc 102 and Chem 162. (Spring)

107 **Genetics** (3) Johnson

Introduction to genetics, with emphasis on the integration of transmission of genetic traits and the molecular basis of gene action. Also includes cytogenetics, gene regulation, and examples of current applications of genetic technology. (Fall and spring)

108 **Genetics Laboratory** (1) Johnson

Study of genetic principles and genetic and molecular techniques in *Drosophila* and *E. coli*. Prerequisite or concurrent registration: BiSc 107. Laboratory fee, \$55. (Spring)

109 **Molecular Biology** (4) Turano

Overview of theories, techniques, and procedures associated with molecular biology; topics include the biosynthesis of DNA, RNA, and proteins, relationships among

structure, function, and expression; and traditional and modern methods of gene and protein characterization and monitoring. Prerequisite: Chem 11–12. Laboratory fee, \$55. (Fall)

110 **Developmental Plant Anatomy** (4) Staff

Demonstration, observation, discussion (6 hours). Initiation and ontogeny of tissues and organs of vascular plants. Laboratory fee, \$55. (Spring, odd years)

112 **Immunology** (3) Staff

Introduction to mammalian immunology covering the progression of immune responses from initial pathogen contact to immune memory. Applied topics include autoimmunity, transplantation, and the effects of HIV on the immune system. Prerequisite: BiSc 102 and one semester of organic chemistry; BiSc 107 or 122 recommended. (Fall)

114 **Developmental Biology** (4) Brown

Lecture (2 hours), laboratory (4 hours). Embryonic development of animals. Principles are illustrated by modern experimental studies of developmental problems. Laboratory analysis of organ system formation in the sea urchin, frog, chicken, and pig. Laboratory fee, \$55. (Fall)

115 **Experimental Developmental Biology** (4) Brown

Lecture (2 hours), laboratory (4 hours). Cell biochemistry and molecular biology of development. Laboratory exercises involve micromanipulative, biochemical, and molecular studies on animal embryos cultured in the lab. Prerequisite:

BiSc 114 or equivalent, or permission of instructor. Laboratory fee, \$55. (Spring, even years)

118 **Histology** (4) Burns

Lecture (2 hours), laboratory (4 hours). Introduction to microscopical anatomy of normal tissues and organs with emphasis on the interrelationship of structure and function.

Laboratory fee, \$55. (Spring)

120 **Human Neurobiology** (3) Bohn

Introduction to the anatomy and function of the human nervous system, gross and microscopic structure, embryology, and neurophysiology of the brain, spinal cord, and nerves; alterations caused by disease or injury. (Fall)

121 **Comparative Endocrinology** (3) Staff

Basic principles of chemical integration, neuroendocrine relationships, and mechanisms of hormone action. Prerequisite: BiSc 118 or 122. (Spring)

122 **Human Physiology** (3) Packer

Introduction to the function of organ systems of the human body. Prerequisite: Chem 11–12. (Fall)

123 **Human Physiology Laboratory** (1) Staff

Study of basic physiology laboratory techniques; emphasis on the experimental study of homeostatic mechanisms in humans. Prerequisite or concurrent registration: BiSc 122. Laboratory fee, \$55. (Fall)

125 **Environmental Physiology** (3) Packer

Mechanisms of evolutionary adaptation and processes of acclimation by which animals respond to environmental challenges; emphasis on vertebrates. Prerequisite: BiSc 122 or 154. (Fall)

130 **Invertebrate Zoology** (4) Knowlton

Lecture (3 hours), laboratory (3 hours). General survey of invertebrate animals, including classification, morphology, physiology, embryology, and evolutionary relationships among phyla. Laboratory fee, \$55. (Fall)

132 **Comparative Vertebrate Anatomy** (4) Hernandez

Lecture (2 hours), laboratory (4 hours). Evolution and comparative morphology of Phylum Chordata, stressing recent forms. Laboratory fee, \$55. (Spring)

137 **Introductory Microbiology** (4) Morris

Lecture (2 hours), laboratory (4 hours). Survey of the major groups of microorganisms with emphasis on structure, physiology, ecology, pathogenesis, and biotechnology. Antibiotic resistance and emerging diseases. Prerequisite: one year of chemistry. Laboratory fee, \$55. (Fall)

139 **Parasitology** (4) Eckerlin

Lecture (2 hours), laboratory (4 hours). Introduction to animal parasitology; survey of parasitic types from protozoa through arthropods. Laboratory fee, \$55. (Fall)

140 **Taxonomy of Flowering Plants** (4) Wells

Lecture (2 hours), laboratory and field (4 hours). Origin, evolutionary development, and principles of systematics of flowering plants. Laboratory fee, \$55. (Spring, even years)

142 **Flora of the Mid-Atlantic States** (4) Wells

Field trips and laboratory study of the identification and ecology of vascular plants of the Coastal Plain, Piedmont, and mountains of Delaware, Maryland, Virginia, and West Virginia. Emphasis on family characteristics and recognition of dominant species in native habitats. Laboratory fee, \$55. (Summer)

150 **Organic Evolution** (3) Lipscomb

Synthetic theory of organic evolution, including population biology, specia-tion, adaptation, macroevolution, systematics, biogeography, and the geologic record. (Spring, odd years)

151 **History of Life (3)** Lipscomb

A review of the origin of life, the geologic record, and the evolutionary history of the major groups of organisms, including the evolution of bacteria, origin of animals and plants, evolution of invertebrates and vertebrates, adaptations of mammals, and the evolution of flowering plants. (Spring, even years)

152 **Animal Behavior (3)** Staff

An evolutionary approach to the study of animal behavior, emphasizing behavioral ecology and sociobiology. (Spring)

153 **Plant–Animal Interactions (3)** Lill

Review of the major ecological and evolutionary interactions that occur between plants and animals in natural and managed ecosystems. BiSc 150 or BiSc 154 recommended. (Fall, even years)

154 **General Ecology (4)** Merchant

Lecture (3 hours), laboratory and field (3 hours). Introduction to the concepts of limiting factors, biogeochemical cycles, trophic levels, and energy transfer and their relationship to the structure and function of population, species, communities, and ecosystems.

Laboratory fee, \$55. (Fall)

155 **Plant Ecology (4)** Wells

Lecture (2 hours), laboratory (4 hours). Introduction to the ecology of plant populations, communities, and individuals. Two weekend field trips required. Laboratory fee, \$55. (Fall, odd years)

156 **Animal Ecology** (4) Merchant

Lecture (3 hours), laboratory and field (3 hours). Application of ecological principles to the understanding and manipulation of animal populations. Prerequisite: BiSc 154 or permission of instructor. Laboratory fee, \$55. (Spring, even years)

157 **Aquatic Ecology** (4) Merchant

Lecture (3 hours), laboratory and field (3 hours). Ecological principles applied to aquatic systems with special references to physiochemical properties, typical habitats, and communities. Laboratory fee, \$55. (Spring, odd years)

158 **Field Botany** (4) Wells

Lecture (2 hours), laboratory and field (4 hours). Field and laboratory studies on vascular plants of the Coastal Plain, Piedmont, and mountains of the mid-Atlantic States. Two weekend field trips required. Laboratory fee, \$55. (Fall, even years)

159 **Geobotanical Ecology of the Central Appalachians** (4) Tollo, Wells

A multidisciplinary approach to Appalachian ecology involving application of scientific principles from both geology and botany, stressing interrelationships between geological, geochemical, and biological processes. Biweekly field trips. Prerequisite: EES 1 or 5 and BiSc 13–14; or equivalent with permission of instructor. Same as EES 159. (Spring, odd years)

160 **Conservation Biology** (3) Lill

Theory and practice of conserving biological diversity. Ecological patterns of biodiversity, biology of small populations, and conservation case studies. Use of ecological modeling software to explore various topics. Prerequisite: BiSc 154 or permission of instructor. (Spring)

162 **Plant–Animal Interactions Laboratory (1)** Lill

Field and laboratory study of temperate interactions between plants and animals. Group projects focus on original data collection, analysis, and interpretation. Prerequisite or concurrent registration: BiSc 153. Laboratory fee, \$55. (Fall, even years)

167 **Marine Biology (4)** Knowlton

Lecture (2 hours), laboratory (4 hours), plus some extended field trips. Study of relationships between organisms and physical, chemical, and biological factors of the marine environment. Consideration of the open ocean and coastal ecosystems and human influences on them. Laboratory fee, \$55. (Spring)

168 **Tropical Marine Biology (4)** Knowlton and Staff

Study of organism diversity and ecology in tropical marine ecosystems. Lectures and laboratory sessions on campus during the semester, followed by fieldwork on the island of San Salvador, Bahamas, during two weeks in June. Contact Department for information on course structure and additional associated costs. Laboratory fee, \$275. (Spring, even years)

169 **Applied Marine Ecology (4)** Knowlton and Staff

Study of coastal boreal ecosystems with emphasis on human impacts. Some lectures and laboratory sessions on campus during the semester, followed by fieldwork along the

Maine coast during three weeks in June. Contact Department for information on course structure and additional associated costs. Laboratory fee, \$350. (Spring, odd years)

171 **Undergraduate Research** (arr.) Staff

Admission by permission of the staff member concerned. May be repeated for credit.

Prerequisite: Chem 50 or 152; 16 credit hours in biological science courses. Laboratory fee, \$50 per credit hour. (Fall and spring)

172 **Independent Study in Cell and Molecular Biology** (2) Donaldson, Morris

Prescribed reading list and consultations with staff advisor culminating in a written report and/or examination. Prerequisite: permission of instructor.

173 **Independent Study in Developmental Biology** (2) Brown, Burns, Hernandez

Prescribed reading list and consultations with staff advisor culminating in a written report and/or examination. Prerequisite: permission of instructor.

174 **Independent Study in Organismic Biology** (2) Knowlton, Wells

Prescribed reading list and consultations with staff advisor culminating in a written report and/or examination. Prerequisite: permission of instructor.

175 **Independent Study in Genetic and Evolutionary Biology** (2) Allard, Johnson,
Lipscomb

Prescribed reading list and consultations with staff advisor culminating in a written report and/or examination. Prerequisite: permission of instructor.

176 **Independent Study in Environmental Biology** (2) Lill, Merchant, Wells

Prescribed reading list and consultations with staff advisor culminating in a written report and/or examination. Prerequisite: permission of instructor.

180 **Biotechnology** (3) Morris

Genetic engineering of bacteria, plants, and animals, including humans. Applications of modern biotechnology, especially in the field of medical biotechnology, such as gene therapy, xenotransplantation, and the Human Genome Project. Regulation, prospects, and social impact of biotechnology. Recommended: BiSc 102 or 107. Prerequisite: organic chemistry. (Spring and summer)

181 **Human Gross Anatomy (3)**

Walsh, Slaby, Bohn

The structural organization of the human body and how it relates to regional and systems-based functions. Emphasis on the macroscopic structure of the body. (Spring)

182 **Diversity and History of Plants (4)**

Herendeen

Lecture (3 hours), laboratory (3 hours). A detailed investigation of the diversity, phylogeny, morphology, and fossil history of plants for advanced undergraduates and graduate students. Prerequisite: BiSc 140 or 150 or 151 or equivalent. (Fall, even years)

183 **Biology of Proteins (2)**

Donaldson

About half of the proteins in the human genome have unknown functions. Are some related to cancers, muscle degeneration, infectious disease? How can evolutionary relationships among proteins from other organisms help us discover functions of unknown proteins? Prerequisite: AP or IB Biology or Chemistry.

(Fall)

BUSINESS ADMINISTRATION

Requirements for the Bachelor of Business Administration degree are listed under the School of Business. The courses listed below form the business core for the B.B.A. degree. Several of these courses are required in the B.Accy. degree as well. BAdm courses are taught by faculty members schoolwide.

1–2 **First-Year Development Course (0–0)** Staff

Required of all first-year students in School of Business. This two-semester noncredit course is designed to enhance students' education and begin preparation for business careers. The course meets periodically during the semester. Course fee, \$75 per semester. Restricted to School of Business freshmen.

51 **Introductory Financial Accounting (3)** Jones, Tarpley, Liang, and Staff

Basic knowledge of financial accounting concepts and standards as an essential part of the decision-making process for the management of private investment and for business and government organizations. Same as Accy 51. Prerequisite: sophomore standing. (Fall and spring)

52 **Introductory Managerial Accounting (3)** Hansen, Paik, Sullivan, and Staff

Basic knowledge of managerial accounting concepts, procedures, analyses, and internal reports as an essential part of the decision-making process for public and private-sector organizations. Prerequisite: Accy/BAdm 51. (Fall and spring)

53 **Management, Organizations, and Society (1.5)** Staff

Introduction to the manager and the management process in the context of organizations and society. Focus on effective management of the corporation in a changing society. (Fall and spring)

55 **Fundamentals of Business Law (1.5)** Kane

Overview of the American legal system with reference to business law and the Universal Commercial Code. Key legal concepts such as contracts and torts. The role of courts: regulation, litigation, and constitution issues. (Fall and spring)

64 **Management Information Systems Technology (3)** Granger, Sahasrabudhe

An introduction to data and information processing concepts and systems viewed from a contemporary management perspective. Emphasis on uses and applications as well as emerging managerial issues with the potential to reshape the form and function of information systems. Lab required. Prerequisite: basic knowledge of Microsoft Word, Excel, and PowerPoint. (Fall and spring)

66 Organizational Behavior (3) Kayes

Introduction to concepts of psychology and the social dynamics that characterize organizations. Decision making, motivation, attitudes, teamwork, power, and leadership. An experiential laboratory component uses case discussions and exercises to illustrate applications of theory and concepts. Restricted to School of Business freshmen. (Fall and spring)

110 Basic Marketing Management (3) Achrol, Liebrezn-Himes, Smith

Consumer and organizational buying behavior. Strategic marketing processes (market research, segmentation, targeting, positioning, and relationship-building). Product development and brand management, valuation and pricing, channel and logistics management, integrated marketing communications, e-commerce. Prerequisite: Econ 12; Stat 51. (Fall, spring, and summer)

115 Financial Management and Markets (3) Locke, Klock

Introduction to financial markets, investment analysis, and financial management. Financial analysis, risk management, working capital management, capital budgeting, financial structure, cost of capital, and dividend policy. Prerequisite: BAdm 51; Econ 12; Math 32 (or 51, 52); Stat 51 or 53. (Fall and spring)

120 Operations Management (3) Perry, Bagchi, White, Matta

Production planning concepts and analytical tools. Designing and managing production processes: facilities, equipment, process control systems. Design issues, demand forecasting, material planning, acquisition techniques. Managing the factory floor: scheduling, total quality management, continuous improvement concepts and methods.

Prerequisite: Stat 51. (Fall and spring)

130 Human Resource Management (3) Goldberg, Gowan, McHugh

How human resource management policies and practices affect the achievement of organization objectives: human resource planning, recruitment, selection, training, development, compensation, and unionism and collective bargaining. Prerequisite: Econ 12. (Fall, spring, and summer)

135 Change and Organizations (1.5) Staff

An exploration of the forces of change that drive organization adaptation. Consideration of both the underlying phenomena and design implications for the organization life cycle, technology change, globalization, competition drivers, and increasing service requirements. (Fall and spring)

145 International Financial Environment (1.5) Rehman, Yang, Click

Assessment of international economic and financial developments as they affect international corporate activity. Conceptual issues and current developments in the international financial environment, including an overview of international economic systems, international financial systems, and global financial markets. Prerequisite: Econ 12. (Fall and spring)

150 Business and Government Relations (3) Griffin, Rivera, Beales

Economic and legal environment of business enterprise; social and political influences; contemporary problems and issues. Restricted to seniors in the B.B.A. and B.Accy. programs. (Fall and spring)

190 **Special Topics** (1 to 3) Staff

Experimental offering; new course topics and teaching methods.

195 **Internship** (0)

School of Business undergraduates may register for this course when they wish to have an internship recorded on the transcript. The supervisor must verify that the internship has been completed for a minimum of six hours per week. A \$25 administrative fee is charged. May be repeated each semester if desired.

197 **Strategy Formulation and Implementation** (3) Davis, Thurman, Cook, Starik, Burke, Teng

An integrative capstone course to develop skills in diagnosing organizational problems, formulating and selecting strategic alternatives, and recognizing problems inherent in strategy implementation. Restricted to seniors in the B.B.A. and B.Accy. programs. (Fall and spring)

199 **Independent Study** (1 to 6) Staff

Assigned topics with interdisciplinary focus. Admission by prior permission of advisor. May be repeated once for credit but in a separate semester.

CHEMISTRY

Professors D. Ramaker, M. King (*Chair*), A. Montaser, J.H. Miller, A. Vertes

Associate Professor M.J. Wagner

Assistant Professors C.L. Cahill, M.G. Zysmilich, L.P. Eisen, V. Sadchenko, H.H. Teng

Instructor J. Hilderbrandt

Assistant Professorial Lecturers C. Woytowicz, J.C. Zenklusen

Bachelor of Arts or Bachelor of Science with a major in chemistry—The department offers four undergraduate majors, all designed to give students a broad background in the basic divisions of chemistry: analytical, inorganic, organic, and physical. Major I, while providing considerable concentration in chemistry, permits a wider selection of electives. It thus should meet the needs of students preparing to enter medicine, dentistry, law, or related fields. Major II is intended primarily for students preparing for graduate study in chemistry or those planning to enter the chemical profession and wishing to be certified by the American Chemical Society as having met the minimum requirements for professional training. Major III is a program in forensic chemistry and prepares students to meet the needs of federal and state forensic sciences laboratories. Major IV includes additional work in biochemistry and fulfills the American Chemical Society requirement for a certified degree program in chemistry with a biochemistry option.

The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses for the Bachelor of Arts degree for all majors—Chem 11–12 or Honr 33–34; Chem 22 and 23; Math 31 and 32; Phys 21–22. Majors intending a Bachelor of Science degree must take two additional semesters of approved course work in the natural sciences or mathematics, such as BiSc 13–14 or EES 1 and 5.
3. (a) Required courses for Major I—Chem 111–12, 113, 122, 134, 151–52, 153–54, 161.
(b) Required courses for Major II—Chem 111–12, 113, 122, 123, 134, 151–52, 153–54, 161, 195 (for a total of 3 credits). A course in a structured computer programming language, such as Stat 129 or CSci 49, 50, 100, or 102, is recommended.

(c) Required courses for Major III—Chem 111–12, 113, 122, 134, 151–52, 153–54, 161; BiSc 13–14; ForS 221, 222, 236, 238, 239.

(d) Required courses for Major IV—Chem 111–12, 113, 122, 123, 134, 151–52, 153–54, 161, 162, 163, 195; BiSc 13–14. BiSc 102, 107, and 122 are recommended.

An entering student who is considering chemistry as a major should consult a Chemistry Department advisor regarding the program of study for the first two years. In general, the following sequence of courses is recommended for those students considering Major II: first year—Chem 11–12 or Honr 33–34, Math 31 and 32 (or 20–21 if necessary); second year—Chem 22, 151–52, and 153–54, Phys 21–22, Math 32 if not taken in first year; third year—Chem 23, 111–12, 113; fourth year—Chem 122, 123, 134, 161 (if not taken in the junior year), 195. Major I, Major III, and Major IV students should follow this sequence in general and are urged to consult with the chemistry and premedical advisors concerning their academic programs.

Special Honors—In addition to meeting the general requirements stated under University Regulations, a candidate for graduation with Special Honors in chemistry must maintain a cumulative 3.0 grade-point average in chemistry courses and take Chem 195 for at least 3 credits over two semesters. In addition to the final report for Chem 195, a poster or oral presentation is required.

Five-Year Bachelor of Science with a major in chemistry/Master of Forensic Sciences with a concentration in forensic chemistry—A program leading to the B.S. in the field of chemistry and M.F.S. with a concentration in forensic chemistry is available. Interested students should consult the Chemistry Department early in the junior year.

Minor in chemistry—Required: Chem 11–12 or Honr 33–34; Chem 22, 23, 110 or 111, 151–52, and 153–54.

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

Note: Upon consultation with course instructors, specific course prerequisites may be waived. Chem 11–12 and Honr 33–34 are related in their subject matter, and credit for only one of these sets of courses can be earned toward a degree.

PHYSICAL SCIENCE

3–4 **Contemporary Science for Nonscience Majors** (3–3) Zysmilich and Staff

Contemporary topics in physical, biological, and medical science. Chem 3 is not prerequisite to Chem 4. Laboratory fee, \$60 per semester. (Academic year)

CHEMISTRY

11–12 **General Chemistry** (4–4) Hilderbrandt, Cahill, Sadtchenko, Eisen, Ramaker

Atomic structure and properties; stoichiometry; gas, liquid, and solid state; chemical bonding; solutions; chemical kinetics and equilibria; thermodynamics; acids and bases; electrochemistry; descriptive chemistry. Prerequisite to Chem 11: one year of high school algebra. Prerequisite to Chem 12: Chem 11. Laboratory fee, \$60 per semester. (Chem 11 and 12—fall and spring)

22 **Introductory Quantitative Analysis** (3) Vertes

Theory and practice of quantitative analysis by modern methods; evaluation of analytical data emphasizing detection and correction of experimental errors. Correlated with Chem 23. Prerequisite: Chem 12. (Spring)

23 **Introductory Quantitative Analysis Laboratory** (1) Sadtchenko and Staff

Laboratory complement to Chem 22. Prerequisite or concurrent registration: Chem 22. Laboratory fee, \$60. (Fall)

- 105 **Environmental Chemistry (3)** Miller
Chemistry and physics of the environment, with emphasis on water and air pollution; environmental analysis and modeling and their limitations. (Fall)
- 110 **Introduction to Physical Chemistry (3)** Ramaker
Gas, solid, and liquid state, chemical thermodynamics, solutions, chemical equilibrium, kinetics, quantum chemistry, spectroscopy, and macromolecules. Prerequisite: Chem 22; Math 31; Phys 2 or 22; or permission of instructor. Not open to chemistry majors. May not be taken for credit by students who have received credit for Chem 111–12 or an equivalent course. (Fall)
- 111–12 **Physical Chemistry (3–3)** Ramaker, Wagner, Miller
Gas laws, chemical thermodynamics, chemical equilibrium, kinetics, quantum chemistry, atomic and molecular spectra, structure of solids, liquids, and macromolecules.
Prerequisite to Chem 111: Chem 22; Math 31; Phys 22; or permission of instructor.
Prerequisite to Chem 112: Chem 111.
(Academic year)
- 113 **Physical Chemistry Laboratory (2)** Miller, Ramaker, Wagner, Eisen, and Staff
Laboratory complement to Chem 111. Prerequisite or concurrent registration: Chem 23, 111. Laboratory fee, \$60. (Spring)
- 122 **Instrumental Analytical Chemistry (3)** Montaser, Vertes
Theory of instrumental methods in qualitative and quantitative analysis, determination of structure, with emphasis on atomic and molecular spectrophotometry, infrared spectroscopy, nuclear magnetic resonance, mass spectrometry, chromatography, and

electroanalysis. Correlated with Chem 123. Prerequisite or concurrent registration: Chem 111 or permission of instructor. (Fall)

123 Instrumental Analytical Chemistry Laboratory (2) Wagner, Sadchenko

Laboratory complement to Chem 122. Prerequisite or concurrent registration: Chem 111 and 122. Laboratory fee, \$60. (Fall)

134 Descriptive Inorganic Chemistry (3) Cahill

Intermediate-level course emphasizing the descriptive chemistry of the elements.

Prerequisite: Chem 22, 23, and 152. (Spring)

141 Experimental Chemistry (3) Staff

Experimental methods common to all disciplines of chemistry. Use of the chemical literature; operation of chromatographic and spectroscopic instrumentation; interpretation of spectra by correlation methods. Prerequisite: Chem 152 and 154. Laboratory fee, \$60. (Fall and spring)

143 Aqueous Geochemistry (3) Teng

Same as EES 143.

151–52 Organic Chemistry (3–3) King and Staff

Systematic treatment of the structure, preparation, properties, and reactions of the principal classes of organic compounds. Fundamental principles of stereochemistry, reaction mechanisms, and spectroscopic methods of analysis. Prerequisite to Chem 151: Chem 12. Prerequisite to Chem 152: Chem 151.

(Academic year)

153–54 Organic Chemistry Laboratory (1–1) King and Staff

Laboratory complement of Chem 151–52. Introduction to and practice in basic skills of synthesis, separation, purification, and identification of organic compounds. Prerequisite or concurrent registration: Chem 151–52. Prerequisite to Chem 154: Chem 153.

Laboratory fee, \$60 per semester. (Academic year)

161 **Biochemistry** (4) Vanderhoek

Prerequisite: Chem 151–52. Same as Bioc 101 and BiSc 103. (Fall)

162 **Special Topics in Biochemistry** (2) Staff

Prerequisite: Chem 161. Same as Bioc 102 and BiSc 106. (Spring)

163 **Biochemistry Laboratory** (2) Vanderhoek

Prerequisite: Chem 161. Laboratory fee, \$75. Same as Bioc 103 and BiSc 104. (Spring)

193 **Chemical Instrumentation** (3) Montaser

Electronic analog measurements and control of electrical quantities in chemical instrumentation; digital and analog data conversion and optimization of electronic measurements in chemical instrumentation; computer interfacing and programming using PC-based systems. Prerequisite: Chem 112 and 122. Laboratory fee, \$35. (Fall)

195 **Undergraduate Research** (1 or 2) Staff

Research on problems approved by the staff. Approval must be obtained prior to registration. A final written report on the work is required. For students requesting Special Honors in chemistry, a poster or oral presentation is also required. May be repeated for credit. Majors are encouraged to take the course for two semesters.

Laboratory fee, \$60. (Fall and spring)

CHINESE

See **East Asian Languages and Literatures.**

CIVIL AND ENVIRONMENTAL ENGINEERING

Professors K. Mahmood, M.I. Haque, K.H. Digges (*Research*), A. Eskandarian, K. Roddis

(*Chair*), M.T. Manzari

Associate Professors V. Motevalli, R. Riffat, C.D. Kan (*Research*)

Assistant Professors S.S. Badie, D. Marzougui (*Research*)

Adjunct Professors B. Whang, M.O. Critchfield, C. Smith

Professorial Lecturer G.C. Everstine

See the School of Engineering and Applied Science for the programs of study leading to the Bachelor of Science with a major in civil engineering.

1 Introduction to Civil and Environmental Engineering (1) Roddis

An introduction to the profession of civil and environmental engineering. Field visits and laboratory exercises complement classroom instruction. (Fall)

117 Engineering Computations (3) Mahmood, Kaufman

Numerical methods for engineering applications. Methods for solving systems of linear equations, root finding, curve fitting, and data approximation. Numerical differentiation and integration and numerical solution of differential equations. Computer applications. Prerequisite: CSci 50. (Fall)

120 Introduction to the Mechanics of Solids (3) Haque, Eskandarian

Stress and strain, axial load problems, torsion, shear force and bending moment, pure bending of beams, shearing stresses in beams, compound stresses, analysis of plane stress and plane strain, combined stresses, deflection of beams, statically indeterminate problems, columns, energy methods. Prerequisite: ApSc 57, 113. (Fall and spring)

121 Structural Theory I (3) Manzari, Badie

Theory of statically determinate structures; stability and determinacy; influence lines and moving loads. Analysis of roof systems and cable structures. Calculation of deflections. Approximate methods of analysis of indeterminate structures. Prerequisite or concurrent registration: CE 120. (Fall)

122 **Structural Theory II (3)** Manzari and Staff

Theory of statically indeterminate structures using matrix methods and classical approaches such as moment distribution and slope-deflection; influence lines; energy methods. Prerequisite: CE 121. (Spring)

166 **Materials Engineering (2)** Gilmore, Haque

Mechanical properties, plastic deformation dislocation theory, yielding, strengthening mechanisms, microstructure and properties, heat treatment of steel, composites, amorphous materials, viscoelastic deformation, creep, fracture, fatigue, fatigue crack propagation. Prerequisite or concurrent registration: ApSc 130. Same as MAE 166. (Fall)

167 **Mechanics of Materials Laboratory (1)** Gilmore, Haque

Measurement of strains and study of failure resulting from applied forces in ductile, brittle, anisotropic, elastomeric, plastic, and composite materials. Study of tension, compression, bending, impact, and shear failures. Prerequisite or concurrent registration: CE 166. Same as MAE 167. (Fall)

168 **Introduction to Geotechnical Engineering (3)** Manzari and Staff

Soils and rock formation, soil composition, permeability, seepage and flow netanalysis, stresses in soil medium, consolidation and settlement, shear strength

of soil, analysis of lateral earth pressures, soil compaction. Prerequisite: CE 120, MAE 126. (Fall)

170 Introduction to Transportation Engineering (3) Eskandarian

Introduction to the principles and applications of transportation planning, geometric design of highways, traffic operation analysis, construction of highway facilities, and intelligent transportation systems. Prerequisite: junior standing. (Fall)

171 Highway Safety Analysis and Design (3) Eskandarian

Principles of safety and applications to geometric design of highways and construction of highway facilities, roadside safety features standards, testing and design, statistical analysis of highway safety data and accident reconstruction, human and vehicle issues, and evaluation of safety improvements. Prerequisite: junior standing. (Spring)

185 Geotechnical Engineering Laboratory (1) Manzari and Staff

Laboratory experiments to evaluate liquid and plastic limits, grain-size distribution, shear strength, compressibility, permeability, and moisture–density relationship of soils. Prerequisite or concurrent registration: CE 168. (Fall)

188 Hydraulics Laboratory (1) Motevalli

Laboratory experiments and demonstrations for stability of floating bodies, Bernoulli's theorem, velocity, and pressure measurements in pipe and flume. (Spring)

189 Environmental Engineering Laboratory (1) Riffat and Staff

Laboratory experiments for physical and chemical analyses of water and wastewater. Measurement of turbidity, alkalinity, dissolved oxygen, BOD, COD, suspended solids, and optimum coagulant dose using jar tests. Corequisite: CE 194. (Spring)

190 Contracts and Specifications (2) Manzari and Staff

Law of contracts, construction contracts, specifications, bidding, insurance and bonds, professional liability, arbitration of disputes, litigation. Prerequisite: junior standing (Spring)

191 **Metal Structures (3)** Roddis

Principles of the design of metal structures, structural elements, connections, specific problems of analysis, methods of construction, professionalism in design. A design project, including the use of computer software and a detailed report, is required.

Prerequisite or concurrent registration: CE 122. (Fall)

192 **Reinforced Concrete Structures (3)** Badie

Properties of concrete and reinforcement; design of shear reinforcement; development of reinforcement; design of columns, floor slabs and building frames; ethics and professionalism in design. A design project, including the use of computer software and a detailed report, is required. Prerequisite or concurrent registration: CE 122. (Spring)

193 **Hydraulics (3)** Mahmood and Staff

Fluid statics: pressure forces, buoyancy, and flotation. Application of kinematic principles; flow fields, stream tubes, and flow nets. Fluid dynamics: applications to pipe flow, hydraulic models, measurement of pressure, and velocity. Open channel flow: applications to water resources engineering. Prerequisite: MAE 126. (Spring)

194 **Environmental Engineering I: Water Resources and Water Quality (3)** Riffat

Physical and chemical analyses of water quality and characteristics. Microbiology of water and pathogens. Introduction to water treatment processes involving coagulation, flocculation, filtration, and disinfection. Prerequisite or concurrent registration: CE 193. (Spring)

195 **Hydrology and Hydraulic Design (3)** Haque and Staff

Descriptive hydrology: hydrologic cycle, precipitation, stream flow, evaporation, and transpiration. Quantitative hydrology: hydrograph analysis, hydrographs of basin outflow, storage routing. Probability concepts in hydrology: flood frequency, rainfall frequency, stochastic hydrology. Culverts and stilling basins. Prerequisite or concurrent registration: ApSc 115, CE 193. (Fall)

196 **Design and Cost Analysis of Civil Engineering Structures (3)** Manzari, Badie, and Staff

Total structural systems concepts. Design of civil engineering structures such as piers, wharves, bulkheads, offshore platforms, dams, and other special structures. Principles of cost analysis for timber, steel, and reinforced concrete structures. Project and report are required. Prerequisite: senior status. (Spring)

197 **Environmental Engineering II: Water Supply and Pollution Control (3)** Riffat

Introduction to wastewater treatment systems including clarification, suspended and attached growth processes. Use of dissolved oxygen models. Water supply and wastewater collection systems, applied hydraulics of pipelines and pumps. Planning to meet quality needs and regulatory requirements. Prerequisite: CE 194. (Fall)

198 **Research (1 to 3)** Staff

Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status. (Fall and spring)

199 **Special Topics (1 to 6)** Staff

Topic announced in the *Schedule of Classes*. May be repeated for credit provided the topic differs.

CLASSICAL AND SEMITIC LANGUAGES AND LITERATURES

Professors J.E. Ziolkowski, E.A. Fisher

Associate Professor E.H. Cline (*Chair*)

Assistant Professors M.D. Ticktin, Y.M. Moses, Y. Peleg, M. Esseesy

Bachelor of Arts with a major in classical humanities—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Latn or Grek 1–2, 3–4, or equivalent, and Clas 71, 72. (Subject to departmental approval, Hmn 1 or Honr 15 may be taken in place of either Clas 71 or 72.)
3. Required courses in the major—(a) 12 credit hours selected from 100-level Latin, Greek, or approved classical studies courses; (b) 18 credit hours selected from AH 101, 102, 103, 104; Hist 107, 108, 109, 110, 111; Ling 101; Phil 111; PSc 105; Rel 143.

Special Honors—In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a student must (1) have attained a 3.7 grade-point average in the major and at least a 3.25 average overall by the end of the junior year, and (2) no later than the beginning of the senior year consult a departmental faculty member about a research project to be prepared under the supervision of that faculty member. Only if a committee of two faculty members approves the completed project will Special Honors be recommended; the research project must be graded *A* or *A–*.

Minor in classical humanities—(a) 6 credit hours selected from Latn or Grek 1–2; (b) 9 credit hours selected from Latn or Grek 3–4, 103, 104; Clas 71, 72, 105, 107, 108, 113, 117, 118, 119, 120, 127, 170, 185, 186; (c) 6 credit hours selected from AH 101, 102; Hist 107, 108, 109, 110.

ARABIC

1–2 **First-Year Arabic (4–4)** Staff

Fundamentals of speaking, understanding, reading, and writing of Modern Standard Arabic. (Academic year)

3–4 **Second-Year Arabic (4–4)** Staff

Continuation of Arab 1–2. Further development of speaking, understanding, reading, and writing skills of Modern Standard Arabic. Prerequisite: Arab 1–2 or equivalent. Laboratory fee, \$50 per semester. (Academic year)

9–10 **Third-Year Arabic (3–3)** Staff

Continuation of Arab 3–4. Further development of speaking, understanding, reading and writing skills of Modern Standard Arabic. Prerequisite: Arab 3–4 or equivalent. Laboratory fee, \$50 per semester. (Academic year)

103 **Modern Arabic Literature—Nonfiction (3)** Staff

Practice and continued development of language skills, utilizing articles from current newspapers, magazines, journals, plus SCOLA broadcasts and video presentations. Prerequisite: Arab 3–4 or permission of instructor. Laboratory fee, \$50. (Fall)

104 **Modern Arabic Literature—Fiction (3)** Staff

Study of selected fiction in Modern Standard Arabic. Practice and continued development of language skills; short essay writing. Prerequisite: Arab 103 or equivalent and permission of instructor. Laboratory fee, \$50. (Spring)

GREEK

1–2 **Beginning Greek: Classical (4–4)** Staff

Study of the grammar, vocabulary, and structure of ancient Greek. Reading of selected ancient authors. (Alternate academic years)

- 3–4 **Intermediate Greek: Classical (3–3)** Staff
- Reading of ancient Greek prose or poetic works (e.g., selections from Homer, Plato, Euripides). Review of grammar. Prerequisite: Grek 1–2 or equivalent. (Alternate academic years)
- 103–4 **Major Greek Authors (3–3)** Staff
- Selections from a wide variety of Greek prose, drama, and poetry, suited to the needs of the class. May be repeated for credit with permission of instructor. Prerequisite: Grek 4 or equivalent.

HEBREW

- 1–2 **Beginning Hebrew (4–4)** Staff
- An active presentation of Hebrew as it is spoken and written today. Comprehension, speaking, reading, and writing skills are stressed. Laboratory fee, \$50 per semester. (Academic year)
- 3–4 **Intermediate Hebrew (4–4)** Staff
- Further development of skills in speaking, reading, writing, and comprehension of modern Hebrew. Texts range from Israeli newspaper items to selections from classical materials. Prerequisite: Hebr 1–2 or equivalent. Laboratory fee, \$50 per semester. (Academic year)
- 103 **Modern Hebrew Nonfiction (3)** Staff
- Directed readings in humanities and social sciences. Development of linguistic skills necessary for independent research. May be repeated for credit. Prerequisite: Hebr 4 or permission of instructor. (Fall)
- 104 **Modern Hebrew Fiction (3)** Staff

Study of selected modern Israeli short stories and poems. Prerequisite: Hebr 103 or permission of instructor. (Spring)

106 **The Israeli Media** (3) Staff

Explores the Israeli press, television and radio news broadcasts in Hebrew; focuses on developing increasing proficiency in reading and aural comprehension through class discussions and written assignments in Hebrew. Prerequisite: Hebr 103 or permission of instructor. (Spring)

120–21 **Advanced Hebrew Literature** (3–3) Staff

Selections from Hebrew literature throughout the ages: Bible, Rabbis, medieval Hebrew literature; classical motifs in modern Israeli literature. Literary analysis (writing and discussion) in Hebrew. Prerequisite: Hebr 104 or permission of instructor. (Academic year)

LATIN

1–2 **Beginning Latin** (3–3) Staff

Grammatical essentials of Latin, appropriate reading selections, development of English derivatives, introduction to Roman life and literature. (Academic year)

3 **Intermediate Latin: Prose and Poetry** (3) Staff

Development of ability to read and understand Latin literature of moderate difficulty. Prerequisite: Latn 1–2 or equivalent. (Fall)

4 **Vergil's Aeneid** (3) Staff

Significant passages of Vergil's famous epic in Latin; reading and discussion of the entire poem in translation. Prerequisite: Latn 3 or permission of instructor. (Spring)

103–4 **Major Latin Authors** (3–3) Staff

Selections from one or two major authors will be read each semester. May be repeated for credit. Prerequisite: Latn 3, 4; or permission of instructor. (Academic year)

YIDDISH

1–2 Yiddish for Reading and Conversation (3–3) Ticktin

Grammatical essentials of the language, appropriate reading selections, conversational exercises for beginners. (Alternate academic years)

CLASSICAL STUDIES (in English)

63 Medical Terms from Greek and Latin (3) Staff

Mastery of medical terminology by learning word elements from Greek and Latin and the principles that govern both the formation of medical words and the derivation of their meanings.

71 Greek Literature and Civilization (3) Staff

Study of ancient Greek civilization with focus on public and private life as seen primarily through literature. (Fall)

72 Roman Literature and Civilization (3) Staff

Study of Roman civilization with focus on public and private life as seen primarily through literature. (Spring)

81 Classical Islamic Literature (3) Staff

A survey of pre-modern Islamic literature, including translations of poetry, prose, popular literature, and selections from the Quran. Topics such as mysticism, court literature, travel literature, urban mercantile literature, etc., are explored from the Arabic tradition as well as from the Persian and Turkish/Ottoman traditions.

82 Modern Middle Eastern Literature (3) Staff

20th-century literature of the Middle East (prose, poetry, short stories, novels), beginning with its 19th-century modernization and emphasizing various themes (e.g., alienation, exile, etc.).

100 **Modern Hebrew Literary Classics (3)** Staff

Prose and poetry of a century of writing from the beginning of the Hebrew literary renaissance to contemporary Israeli literature, including works of Bialik, Agnon, Hazaz, Amichai, Oz, and Yehoshua. Discussions stress historical development and authors' treatments of tradition and modernity.

101 **Israeli Society and Culture: Literary Perspectives (3)** Staff

A study of literature reflecting such contemporary issues as the conflict between the "builders' generation" and their children; the cultural contacts of Ashkenazim and Sefardim; image of the Arab; impact of the Holocaust; Zionist ideals and current realities. (Fall)

105 **Special Topics (3)** Staff

Topics in Arabic, Greek, Hebrew, Roman, and Yiddish literature; topics announced in the *Schedule of Classes*. May be repeated for credit provided the topic differs.

107 **Greek and Roman Mythology (3)** Staff

The creation of the world, the nature of the gods, and the adventures of heroes as described in various Greek and Roman literary sources (e.g., epic, drama, hymns) and as shown in ancient art. (Fall)

108 **Approaches to Classical Mythology (3)** Staff

Selected myths examined through various disciplinary approaches, such as archaeology, psychology, history, comparative literature, and women's studies. Prerequisite: Clas 107 or equivalent. (Spring)

113 Greek and Roman Drama (3) Staff

Study of Greek and Roman tragedy and comedy; the nature and setting of dramatic performance in classical antiquity.

117 The Ancient Near East and Egypt to 322 B.C. (3) Cline

Same as Hist 107.

118 History of Ancient Israel (3) Cline

Same as Hist 108.

119 Early Aegean and Greek Civilizations to 338 B.C. (3) Staff

Same as Hist 109.

120 The Roman World to 337 A.D. (3) Staff

Same as Hist 110.

127 Classical Influence on Western Civilization (3) Ziolkowski

A survey of Greek and Roman influence on Western civilization, especially in architecture, language, literature, and science. Prerequisite: a course in classical literature or history.

170 Issues of Gender in Classical Antiquity (3) Staff

In-depth study and discussion of readings from ancient and modern sources on women and gender difference in Greek and Roman society.

185–86 Directed Project (1, 2, or 3) Staff

Individual advanced reading or research, to be arranged with a member of the faculty.

May be repeated for credit. Admission by permission of instructor and department.

COLUMBIAN COLLEGE OF ARTS AND SCIENCES

The Columbian College Proseminar for Scholarship and Advising is a requirement for Columbian College freshmen in their first semester. A faculty member serves as the proseminar leader with a team that includes members of the University's professional and administrative staff and student peer advisors.

10 Proseminar for Scholarship and Advising (0) Staff

For entering Columbian College freshmen, providing an introduction to scholarship in the liberal arts and sciences, promoting effective participation in a richly diverse academic community, and encouraging an enlightened self-sufficiency in the selection of courses and majors. Graded on a *P/NP* basis only.

COMMUNICATION

See **Organizational Sciences and Communication**.

COMPUTER SCIENCE

Professors W.D. Maurer, S.Y. Berkovich, M.B. Feldman, P.S. Bock, J.L. Sibert, R.S. Heller, C.D. Martin, H.-A. Choi, A. Youssef, B. Narahari, S. Muftic (*Research*), J.K. Hahn (*Chair*), N.

Howard (*Research*), R. Simha, R. Price Jones

Associate Professors S. Rotenstreich, A. Bellaachia

Assistant Professors J. Stanton, X. Cheng, P. Vora, L.D. Florea

Adjunct Professors G.J. Kowalski, D.C. Roberts, S.H. Kaisler

Associate Professorial Lecturers T. Hanson, T. Aleem, A. Draganova, M. Happel, A. Kim, R.

Sabett, T. Rosenberg

Assistant Professorial Lecturers R.A. Fernandez, T. Bragg, M. Lancaster

See the School of Engineering and Applied Science for programs of study leading to the Bachelor of Arts and Bachelor of Science with majors in computer science.

Note: With the exception of CSci 41, 53, and 105, CSci courses numbered 110 and below may not normally be counted toward degree requirements for computer science majors.

10 Applications Software (3) Heller and Staff

Introduction to the use of microcomputer hardware and software for word processing (e.g., Word), spreadsheets (e.g., Excel), and database management (e.g., Access), with emphasis on the use of computers to solve typical problems in academia and business. (Fall and spring)

30 Introduction to Computers and the Internet (3) Martin and Staff

Survey of computers and languages. Introduction to computer programming. History of computing and networking. The effects of computing and the Internet on our lives. E-commerce and new technologies. Concepts of web page design. (Fall and spring)

33 Introduction to Internet Technology (3) Heller and Staff

An introductory course for non-technical students who wish to obtain a better understanding of the hardware and software that comprise the Internet. Information transfer over fiber, routing and switching of packets, methods of information transfer, protocols, software, ISP, web pages and multimedia. (Fall and spring)

35 Introduction to Web Software Development (3) Martin and Staff

Introduction to the Internet. Topics include address and URL to find your way, linking to a URL, HTML and web programming, building a web page, building a home page, client-server techniques. (Fall and spring)

41 **Introduction to Computer Science (3)** Feldman and Staff

A broad, nonprogramming survey of computing as a scientific discipline. History, hardware and software, key classical problems. Overview of bioinformatics, biomedical computing, computer security and information assurance, and digital media. (Fall)

49 **Introduction to C Programming (3)** Choi and Staff

Structured programming with the C language. Control structures. Data types. Use of pointers. Matrix manipulation to solve simultaneous equations. External subroutines for mathematical and graphical applications. Introduction to C11. Complex number representation. Corequisite: Math 20 or 31. (Spring)

50 **Introduction to FORTRAN Programming (3)** Bock and Staff

Structured programming with high-level language using FORTRAN. Control structures. Different data types with emphasis on real and complex number computations. Arrays used with vector and matrix manipulation to solve simultaneous equations. External subroutines for mathematical and graphical applications. Prerequisite or corequisite: Math 20 or 31. (Spring)

53 **Introduction to Software Development (3)** Feldman and Staff

Introduction to the solution of problems on a digital computer using the Java language. Object-oriented programming concepts; documentation techniques; design of test data. Writing, debugging, and running programs in an interactive computing environment. Prerequisite or corequisite: CSci 41. (Fall)

100 **Introduction to Programming with C++ (3)** Martin and Staff

Intensive introductory course for students with a science, mathematics, or other quantitative background. Solution of numerical and nonnumerical problems on a digital

computer using C++ programming language in a Unix environment. Recommended for graduate and advanced undergraduate students in other departments. Prerequisite: Math 32 or equivalent. (Fall)

102 **Introduction to Programming with Java (3)** Simha and Staff

An introductory course in programming a computer, using the Java language. Object-oriented programming, classes, applets, methods, control structures, inheritance, overriding, widgets and the AWT package, containers, and exceptions. (Spring)

103 **Data Structures and C++ (3)** Maurer and Staff

Big-O notation, linked lists, stacks, queues, trees, graphs, searching, sorting, resizable arrays. Classes in C++, templates, constructors, destructors, exceptions, files, derived classes, operator overloading. May be taken for graduate credit by students in fields other than computer science. Prerequisite: CSci 49 or 100. (Fall)

105 **Introduction to Computer Security and Information Assurance (3)** Vora and Staff

Introduction to key concepts of computer security: risk analysis, basic cryptography, operating system security, network security concepts, database security concepts. Related policy issues such as privacy and intellectual property. May not be taken for credit by computer science majors in the computer security and information assurance option.

Prerequisite: CSci 53. (Fall)

110 **Technology and Society (3)** Martin and Staff

Historical, social, and ethical issues of the technological age. Ethical principles and skills and social analysis skills needed to evaluate the design and implementation of complex computer systems. Privacy, computer crime, equity, intellectual property, professional

ethics. Data collection, analysis, and presentation; technical writing and oral communication skills. (Fall)

123 Discrete Structures (3)

Narahari and Staff

Mathematics for computer science. Sets, functions, sequences. Propositional and predicate calculus, formal proofs, mathematical induction. Matrices, semigroups, groups, isomorphism. Relations, partitions, equivalence relations, trees, graphs. May be taken for graduate credit by students in fields other than computer science. Prerequisite: CSci 41 or 49; Math 20 or 31. (Fall and spring)

133 Algorithms and Data Structures I (3)

Feldman and Staff

Object-oriented software. Inheritance, exceptions, development of classes and applets, event-driven programming. Data structures such as trees, lists, stacks, queues, and strings. Sorting and searching. Introduction to algorithm performance prediction. May be taken for graduate credit by students in fields other than computer science. Prerequisite: CSci 53. (Spring)

135 Computer Architecture I (3)

Narahari and Staff

Computer organization, structure of primary and secondary memory, cache structure, input/output subsystems, digital logic and chips, microprogramming structures, instruction formats, methods of addressing, and virtual memory. Prerequisite: CSci 123, 133. (Fall)

136 Computer Architecture II (3)

Narahari and Staff

Assembly and machine language programming, integer and floating-point arithmetic units, design of computer components, design of a simple computer, design of a pipelined

computer, design of cache, main memory and virtual memory systems, design of buses, channels and the I/O structure. Prerequisite: CSci 135. (Spring)

143 Software Engineering I (3) Simha and Staff

Review of programming techniques and software development in one or more programming languages. Application development with GUIs, database access, threads, Web programming. Prerequisite: CSci 133. (Fall)

144 Introduction to Bioinformatics (3) Florea and Staff

Broad introduction to the field of bioinformatics. Overview of DNA/RNA, proteins, and the central dogma. Biological databases and searching. The new biology lab. Alignment tools. Protein structure and function. Overview of phylogenetics. May be taken for graduate credit by students in fields other than computer science. Prerequisite: BiSc 14. (Fall and spring)

147 Team Project Development and Professional Ethics (3) Martin and Staff

Development of a large software project using a team approach. User interface and interface standards. Integration and testing of modules. Social impact analysis. Professional code of ethics. Intellectual property; computer crime and hackers. Oral presentation and demonstration of the project. Prerequisite or corequisite: CSci 143 or permission of instructor. (Spring)

148 Introduction to Biomedical Computing (3) Hahn and Staff

A survey of the problems and solutions in biomedical computing. Application of computers in medicine. Patient care and monitoring systems, electronic medical records, digital imaging and analysis. Telemedicine, medical ethics, health care regulations and organizations. (Spring)

150 Foundations of Computing (3) Youssef and Staff

Ordering, formal grammars, finite-state machines, equivalence of machines, reduction, finite-state languages, acceptors, regular expressions, pushdown automata, context-free languages, Turing machines, computability. Prerequisite: CSci 135, 143. (Fall)

151 Algorithms and Data Structures II (3) Simha and Staff

Advanced data structures (internal and external): hash tables, AVL trees, B-trees.

Advanced algorithms: graph searches, shortest path, greedy method, divide and conquer, dynamic programming, backtracking. Introduction to NP-completeness. Prerequisite: CSci 123, 143. (Fall)

156 Introduction to Operating Systems (3) Rotenstreich and Staff

Process management, process state, concurrent processing, synchronization, events.

Operating system structure, the kernel approach, processor scheduling, task switching, monitors. System management, memory management, process loading, communication with peripherals. File systems. Interactive computation. Prerequisite: CSci 103 or 143. (Fall)

160 Theory of Computer Translators (3) Choi and Staff

Lexical and syntax analysis, regular expressions, context-free grammars, parsing techniques, top-down parsing, efficient parsing, syntax-directed translation, intermediate formats, flow of control, block structures, procedure calls, symbol tables, run-time storage, error-detection and recovery, code optimization, code generation. Prerequisite: CSci 136, 150. (Spring)

161 Software Engineering II (3) Rotenstreich and Staff

Requirements definition, modularity, structured design, data and functional specifications, verification, documentation. Program design. Software tools, maintenance, project organization, design teams, quality assurance. Prerequisite or corequisite: CSci 151. (Spring)

162 **Cryptography** (3) Vora and Staff

How to safeguard digital possessions. Cryptography from Julius Caesar to public key cryptography. Key management problems and solutions. Cryptographic systems and applications, including IPSec, SSL, PGP, and RSA. Prerequisite: CSci 150, 151. (Spring)

166 **Computational Biology** (3) Florea and Staff

Pairwise alignment and scoring. Multiple sequence alignment. Fragment assembly, physical mapping of DNA. Phylogenetic trees. Molecular structure prediction and protein folding. Microarrays and microarray data, image comparison. Clustering. Overview of biological databases, PDB, MMDB, GenBank. Draft genomes and genome browsers. Pathway databases. May be taken for graduate credit. Prerequisites: CSci 144 and 151 or 212. (Spring)

168 **Biomedical Computing** (3) Hahn and Staff

Computing issues in epidemiology and biosurveillance, decision support, medical imaging and visualization, image-guided surgery; medical databases, issues in system integration, mobile medical computing. May be taken for graduate credit. Prerequisite: CSci 143, 148; corequisite: CSci 178. (Spring)

169 **Software Paradigms** (3) Feldman and Staff

Comparison of the major paradigms of software design and their embodiment in programming languages. Object-oriented, procedural, scripting, functional, and concurrent software design paradigms and patterns. Prerequisite: CSci 143.

(Fall)

171 **Concepts and Applications of Computer Graphics (3)** Hahn and Staff

2-D graphics principles. Principles of digital painting, drawing, and photo-editing. Image manipulation and storage, electronic color representation, and printing. Building 3-D geometry and rendering; 3-D input and output devices and techniques. Prerequisite: CSci 143. (Spring)

172 **Computer Security (3)** Vora and Staff

Risk analysis, cryptography, operating system security, identification and authentication systems, database security. Prerequisite: CSci 156; corequisite: CSci 183. (Fall)

173 **Introduction to Numerical Methods (3)** Youssef and Staff

Numerical methods for solving simultaneous linear equations, roots of equations, eigenvalues and eigenvectors, numerical differentiation and integration, interpolation, solution of ordinary and partial differential equations, and curve fitting. May be taken for graduate credit. Prerequisite: ApSc 113, 115; CSci 133 or equivalent. (Fall)

174 **Introduction to Artificial Intelligence (3)** Bock and Staff

Knowledge representation, search, and reasoning. Structure and function of natural intelligence. Solving complex problems with uncertain knowledge. Biologically inspired paradigms (neural networks, adaptive learning, genetic algorithms). Statistical classification and clustering. May be taken for graduate credit. Prerequisite: CSci 151 or 212; ApSc 115. (Spring)

175 **Information Policy (3)** Martin and Staff

Roles, issues, and impacts of computer-based information systems in national and international arenas, focusing on privacy, equity, freedom of speech, intellectual property, and access to personal and governmental information. Professional responsibilities, ethics, and common and best practices in information use. May be taken for graduate credit. (Fall)

178 **Database Systems I (3)** Narahari and Staff

Design and architecture of relational database systems. Query language, data models, data structures to minimize access time, relational data structures. Construction of a database management system. Prerequisite: CSci 147. (Spring)

180 **UNIX System Programming (3)** Maurer and Staff

Exposure to UNIX internals. Use of UNIX system calls and utilities in conjunction with script and C programs. RFCs, GNU project, and other collaborative traditions in the UNIX community. May be taken for graduate credit. Prerequisite: Senior status or 1 year of C programming and UNIX user experience. (Fall)

181 **Design of Computer Animation I (3)** Hahn and Staff

Use of commercial 3-D computer animation packages to create digital artistic works. Principles of animation, including timing, exaggeration of motion, and anticipation; use of a storyboard; modeling; motion; rendering and editing. Prerequisite: CSci 171. (Fall)

182 **Design of Computer Animation II (3)** Hahn and Staff

Use of commercial 3-D animation packages to create artistic works and visualizations. Process-spanning concepts of development through pre-production, production, and post-

production. Emphasis on developing original content and attaining high production values. Prerequisite: CSci 181. (Spring)

183 **Computer Networks I** (3) Heller and Staff

Higher-layer protocols and network applications on the Internet, such as session layer, presentation layer, data encryption, directory services and reliable transfer services, telnet, network management, network measurements, e-mail systems, and error reporting. Prerequisite: CSci 135, 143. (Fall)

184 **Computer Networks II** (3) Stanton and Staff

Computer networks and open system standards. Network configurations and signals, encoding and modulation, transmission media, connection interfaces, error detection and correction, signal compression, switching, link layer control, ISDN, X.25, frame relay, ATM, and Sonet. Bridges, routers, and routing algorithms. Prerequisite: CSci 183. (Spring)

185 **Computer Graphics I** (3) Hahn and Staff

Hardware; concepts of graphics subroutine packages; programming concepts for interaction, display, and data structuring; basic clipping and scan-conversion algorithms; homogeneous coordinates; three-dimensional viewing transforms; basic rendering. May be taken for graduate credit. Prerequisite: CSci 143 or 210. (Spring)

186 **Simulation Methods** (3) Bock and Staff

Computational methods for continuous and discrete system simulation. Effects of computer software and hardware architectures on computational precision and accuracy requirements. Random-number generation and testing. Calibration and scaling technique. Verification and validation technique. Prerequisite: CSci 143. (Spring)

187 **Design of User–Interface Programs (3)** Sibert and Staff

Structure of interactive programs. Widgets, windows, and input devices. Client–server model, event-driven programming, and callbacks. Window systems (e.g., Xwindows) and dialog control. May be taken for graduate credit. Prerequisite: CSci 143 or 210. (Spring)

188 **Software Design for Handheld Devices (3)** Maurer and Staff

Design of interactive software for handheld devices. Event driven programming, user interface design practices, memory management, handheld debugging techniques. May be taken for graduate credit. Prerequisite: CSci 143 or 210. (Spring)

189 **Unix System Administration (3)** Maurer and Staff

System administration for the stand-alone system or small networks. Installation of two or more UNIX variants (Linux, FreeBSD, Solaris) on Intel or Sparc platforms. Configuration of mail, name services, and other network utilities. Backup and recovery, security and ethics. May be taken for graduate credit. Prerequisite: CSci 180. (Spring)

190 **Real-Time Computer Systems (3)** Narahari and Staff

Development of software for real-time control of physical systems. Reliability and fault tolerance, exceptions and exception handling, reliability and concurrent processes, timeouts, deadline scheduling, shared-memory and message-based device drivers. May be taken for graduate credit. Prerequisite: CSci 143. (Spring)

191 **Computer Game Design and Programming (3)** Hahn and Staff

Principles, techniques, and design of computer games. Graphic game engines, modeling, motion, AI and interaction; sound design and synthesis; real-time software and hardware issues. May be taken for graduate credit. Prerequisite: CSci 185. (Fall)

192 **Network Security (3)** Stanton and Staff

Security protocols and applications in local and global networks; IPsec and other communication-level security systems; security in local area networks (Kerberos); authentication and key-exchange protocols; certificates and PKI; secure network applications. Prerequisite: CSci 172. (Spring)

193 **Development of Open-Source Software (3)** Stanton and Staff

Design, process, tools, and culture of open-source software development. Cross-platform development and testing. Geographic dispersal, social and team dynamics, licenses (GPL, BSD, other); code reuse (modular code, shared libraries); very-large-scale distributed development techniques (CVS, Bugzilla, release-management, mailing-lists). May be taken for graduate credit. Prerequisite: CSci 143 or 210. (Fall)

194 **Discrete Analysis in Computer Science (3)** Berkovich and Staff

Combinatorial theory: permutations and combinations, generating functions, recurrence relations, the principle of inclusion and exclusion. Block designs. Applications to the analysis of algorithms, computer organization, VLSI placement, coding theory, simulation, and other problems. May be taken for graduate credit. Prerequisite: CSci 123 or permission of instructor. (Fall)

195 **Senior Computer Science Design Project I (3)** Sibert and Staff

Conception, planning, design, and construction of a one-year project. Economic analysis of the product. Use of Gantt charts. Lectures on presentation techniques, project construction, ethics, and professionalism. Five project report presentations, using visual aids. Formal written reports. Start of the construction. Prerequisite: CSci 178; and senior status. (Fall)

196 **Senior Computer Science Design Project II (3)** Sibert and Staff

Completion and demonstration of project started in CSci 195. Formal written reports, demonstrations, and oral presentations, using visual aids, of the progress of the project throughout the semester. Lectures on presentation techniques, ethics, project plans, testing procedures, user's manual, and user interfaces. Prerequisite: CSci 195. (Spring)

197 **Special Topics (1 to 3)** Staff

Topic to be announced in the *Schedule of Classes*. (Fall and spring)

198 **Research (1 to 3)** Staff

Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status. (Fall and spring)

COUNSELING/HUMAN AND ORGANIZATIONAL STUDIES

Programs in counseling are offered at the graduate level by the Graduate School of Education and Human Development through its Department of Counseling/Human and Organizational Studies. The following courses are available to undergraduates.

COUNSELING

162 **Professional and Ethical Orientation to Counseling (3)** Staff

The roles and functions of a professional counselor and the ethical standards that govern the profession. (Fall, spring, and summer)

163 **Psychosocial Adjustment (3)** Staff

Mental health problems; emphasis on needs of counselors, teachers, and others working with children and adolescents. (Fall)

175 **Introduction to Rehabilitation Counseling (3)** Staff

Overview of rehabilitation profession, including philosophy, history, ethics, theory, legislation, settings, and practice. (Fall)

178 **Disability Management and Psychosocial Rehabilitation (3)** Staff

Case management services for persons with physical, mental, and emotional disabilities. (Spring)

181 **Medical and Psychosocial Aspects of Disabilities (3)** Staff

Chronic and traumatic disorders with rehabilitation and psychosocial implications. (Fall)

CRIMINAL JUSTICE

See **Sociology**.

DANCE and DRAMA

See **Theatre and Dance**.

DRAMATIC LITERATURE

Committee on Dramatic Literature

N.C. Garner (*Chair*), R.L. Combs, G. Paster, W.A. Pucilowsky

Columbian College of Arts and Sciences offers an interdisciplinary program in dramatic literature leading to the degree of Bachelor of Arts. This major, which combines the strengths of the Departments of English and of Theatre and Dance, is designed to give equal consideration to the two key aspects of theatre—the literary text and the production.

Bachelor of Arts with a major in dramatic literature—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.

2. Prerequisite courses—A 6-credit sequence chosen from Engl 51–52, 61–62, 71–72, 73–74, 91–92; Hmn 1, 2; Honr 15–16.

3. Required courses for the major (42 credit hours):

(a) Engl 120, 127–28; Engl/TrDa 124; TrDa 145–46.

(b) 12 credit hours in drama courses or related topics selected from Clas 113; Engl 105, 108, 155, 156, 157, 158, 165, 166; Mus 121; Fren/Span 132.

(c) 12 credit hours in performance and production courses in the Department of Theatre and Dance, including TrDa 14, 130, 147.

EARLY MODERN EUROPEAN STUDIES

Committee on Early Modern European Studies

L.B. Salamon (*Chair*), I. Azar, L. Chang, I. Creppell, H. Dugan, J.G. Harris, P. Jacks, R.E.

Kennedy, Jr., D. Khoury, M. Norton, L. Peck, D. Wallace, L. Youens

Columbian College of Arts and Sciences offers an interdisciplinary program in early modern European studies. This humanities program is designed to enhance the student's understanding of the history, culture, politics, philosophy, religion, science, literature, and art of the five centuries (1300–1800) during which the Western world began to take on some of its modern dimensions. The program is directed by an interdepartmental committee.

Bachelor of Arts with a major in early modern European studies—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite—four semesters of study, or the equivalent, in a modern European language or Latin.
3. Requirements for the major (all courses are to be chosen in consultation with the advisor):

(a) 6 credits chosen from AH 120, 121; Hist 121, 123; PSc 106; Rel 145.

(b) 18 credits, consisting of two sets of 9 credits selected from two of the following four groups:

Group A—Fren 53, 121, 122, 123; Ger 91, 171, 195; Ital 53, 120, 197; Span 53, 121, 122, 123;

Group B—AH 120, 121, 122, 123, 131, 132, 140; Mus 126; Group C—Engl 125, 127–28, 130,

131–32, 153, 155, 172; Clas 127; Group D—Hist 121, 122, 123, 125, 141, 148, 151, 153, 154, 193.

(c) 6 credits chosen from the entire set of courses listed above or from approved departmental Special Topics or Independent Study courses.

Minor in early modern European studies—Requirements: four semesters of study in a modern European language, or three semesters of Latin, or the equivalent; AH 120 or 121; one course chosen from Hist 121 or 123, PSc 106, or Rel 145; two additional courses chosen from 3(b) above.

EARTH AND ENVIRONMENTAL SCIENCES

For information on majors in geoscience and environmental science, contact the Biological Sciences Department; for information on the major in environmental studies, contact the Geography Department.

1 **Physical Geology (3)**

Rye, Stephens, Tollo

Lecture, laboratory. An introduction to the principal features of the composition and structure of the earth. Topics include the nature of minerals and rocks, surface and deep earth processes, mineral and energy resources, and plate tectonics. Laboratory fee, \$35.

Credit will not be given for both EES 1 and 5.

(Fall and spring)

2 **Environments of the Past (3)**

Rye, Fedo

Lecture, laboratory. An introduction to the history of the earth. Topics include sedimentary environments, plate tectonics, origin of life, and evolution. Laboratory fee, \$35. Prerequisite: EES 1 or 5. (Fall and spring)

5 **Environmental Geology (3)** Lewis, Hanchar, Teng

Lecture, laboratory. An introduction to the impact of geology on the environment, with emphasis on the relation of people and society to natural environments; population evolution, natural hazards, and mineral resources. Laboratory fee, \$35. Credit will not be given for both EES 1 and 5. (Fall and spring)

6 **Science and the Environment (3)** Teng

The large-scale processes operating within the atmosphere, oceans, and solid Earth. Prerequisite: EES 1 or 5. (Spring)

105 **Geological Hazards in Land-Use Planning (3)** Staff

Lecture and laboratory. An analysis of geological hazards and related factors that affect land-use planning. Field trip. Prerequisite: EES 1 or 5 or permission of instructor. Laboratory fee, \$30. (Spring)

111 **Mineralogy (4)** Tollo

Lecture and laboratory. Introduction to the crystallography and chemical systematics of rock-forming and exotic minerals. Exercises emphasize the analysis of mineralogic data and the paragenesis of mineral assemblages. Prerequisite: EES 1 or 5 or permission of instructor. Laboratory fee, \$30. (Fall)

112 **Optical Mineralogy (4)** Tollo

Lecture and laboratory. Introduction to basic light theory and the identification and characterization of minerals through optical properties. Laboratory exercises provide an

introduction to petrologic analysis of igneous and metamorphic mineral systems.

Prerequisite: EES 111 or permission of the instructor. Laboratory fee, \$30. (Spring)

117 **Petrology** (2) Staff

Introduction to silicate phase systems; physics and chemistry of crustal and magmatic processes; volcanic processes and products. Prerequisite: EES 111, 112; or permission of instructor. (Fall)

118 **Petrology Laboratory** (2) Staff

Concurrent registration in EES 117 required for geoscience majors. Prerequisite: EES 111 and 112. Laboratory fee, \$35. (Fall)

122 **Structural Geology** (3) Stephens

Lecture and laboratory. Study of natural and experimental rock deformation and the relationships between stress and strain as recorded by geologic structures. Prerequisite: EES 1 or 5. Laboratory fee, \$25. (Fall)

124 **Digital Mapping for the Natural Sciences** (3) Stephens

Principles of surveying, GPS, data structuring, and GIS compilation. Field and laboratory exercises. Laboratory fee, \$30. (Spring, odd years)

125 **Marine Geology** (3) Kravitz

Lecture and map work. Principles of oceanography and submarine geology; topography, crustal structure, sedimentary processes, and marine environment. Prerequisite: EES 1 or 5 or permission of instructor. (Spring)

126 **Sedimentology and Stratigraphy** (4) Fedo

Introduction to sedimentation and stratigraphy; origin and classification of sediments and sedimentary rocks; introduction to clastic and carbonate depositional environments and stratigraphic principles. Prerequisite: Chem 11; EES 2, 111.

(Fall)

128 **Geomorphology (4)** Stephens

Lecture (2 hours), laboratory (2 hours). Understanding the nature, origin, and development of landforms in the field and through the use of maps and aerial photos.

Prerequisite: EES 1 or 5. Laboratory fee, \$30. Same as Geog 128.

(Spring, even years)

131 **Global Climate Change (3)** Staff

Fundamental causes and patterns of climate change. Methods of reconstruction of past climates; modeling and predicting climate change. (Spring)

140 **Introduction to Geochemistry (3)** Hanchar

Chemical systems and processes on the planet Earth; origins and interactions among and within the Earth's lithosphere, oceans, and atmosphere; origin, distribution, and behavior of the elements; radioactive and stable isotope systems. Prerequisite: Chem 11–12 or equivalent.

143 **Aqueous Geochemistry (3)** Teng

Application of chemical principles to the study of natural waters. Impact of natural and anthropomorphic factors on quality and chemistry. Prerequisite: EES 140, Chem 11–12, or equivalent. Same as Chem 143.

150 **Dinosaurs: Evolution and Natural History (3)** Staff

An introductory course on the natural history of dinosaurs—their evolution, biology, and ecology, their false portrayal in the press, and how scientists study them. (Summer)

151 Invertebrate Paleontology (3) Staff

Lecture and laboratory. Review of major invertebrate fossil groups. Uses of fossils in studies of macroevolution, paleoecology, biostratigraphy, tectonics, and climatology.

Field trips as arranged. Prerequisite: EES 1 and 2 or 2 and 5 or permission of instructor.

Laboratory fee, \$30. (Fall)

154 Vertebrate Paleontology (3) Staff

Lecture (2 hours), laboratory or field work as arranged. General features of vertebrate morphology and evolution; problems of paleoecology and adaptation. (Fall, odd years)

159 Geobotanical Ecology of the Central Appalachians (4) Tollo, Wells

A multidisciplinary approach to Appalachian ecology involving application of scientific principles from both geology and botany, stressing interrelationships between geological, geochemical, and biological processes. Biweekly field trips. Prerequisite: EES 1 or 5 and BiSc 13–14; or equivalent with permission of instructor. Same as BiSc 159. (Spring, odd years)

174 Introduction to Hydrogeology (3) Hanchar

Occurrence, storage, movement, quality, pollution, and the hydrologic properties of subsurface water. Prerequisite: EES 1 or 5.

189 Environmental Geophysics (3) Stephens

Principles of magnetic, gravity, seismic and electrical methods applied to geological problem-solving. Prerequisite: EES 122 or permission of instructor. (Spring)

191–92 Senior Seminar in Environmental Studies (3–3) Merchant

Directed reading and discussion of contemporary environmental problems. Limited to majors in environmental studies or environmental science or with permission of instructor.

193 Introduction to Environmental Law (3) McGuirl

An introduction to selected pieces of major environmental legislation. The role of the courts and bureaucracy in implementing and interpreting legislation. Impact on decision making. (Fall)

195 Geological Field Methods (3) Tollo

Weekend field trips. Methods of outcrop analysis, geologic mapping, and data interpretation. The geological evolution of the central Appalachian mountains is emphasized. Laboratory fee (field trip fee), \$30. (Spring)

196–97 Field Experience (3–3) Staff

Open to juniors and seniors majoring in environmental studies and environmental science. Students spend at least eight hours per week in a political, technical, legal, or special-interest organization working on environmental questions.

199 Undergraduate Research or Reading (arr.) Staff

Problems approved by the staff. May be repeated once for credit.

EAST ASIAN LANGUAGES AND LITERATURES

Professors J. Chaves, Y.-K. Kim-Renaud (*Chair*)

Associate Professors D.L. Lee, S. Hamano

Assistant Professors I.L. Hanami, P.N. Zhang

Adjunct Assistant Professor M. Frost

Assistant Professorial Lecturer J. Finch

Lecturers H.V. Pham, W.K. Cavanaugh, Y. Kim

Bachelor of Arts with a major in Chinese language and literature—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Chin 1–2, 3–4; or equivalent.
3. Required for the major—Chin 105–6, 107–8, 109–10, 111–12, and 12 additional credit hours of 100-level Chinese courses; plus 6 hours in related 100-level courses outside the program, as approved by the program advisor.

Bachelor of Arts with a major in Japanese language and literature—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Japn 1–2, 3–4; or equivalent.
3. Required for the major—Japn 105–6, 109, 111–12, and 18 additional credit hours of 100-level Japanese courses; plus 9 hours in related 100-level courses outside the program, as approved by the program advisor.

Minor in Chinese language and literature—Prerequisite: Chin 1–2, 3–4; or equivalent. The minor consists of Chin 105–6 and 12 additional credit hours of 100-level Chinese courses.

Minor in Japanese language and literature—Prerequisite: Japn 1–2, 3–4; or equivalent. The minor consists of Japn 105–6 and 12 additional credit hours of 100-level Japanese courses.

Minor in Korean language and literature—Prerequisite: Kor 1–2, 3–4; or equivalent. The minor consists of Kor 105–6 and 12 additional credit hours of 100-level Korean courses.

CHINESE

1–2 **Beginning Chinese I–II (4–4)**

Zhang

- Fundamentals of grammar and pronunciation, with graded reading and practice in writing. Laboratory fee, \$50 per semester. (Academic year)
- 3–4 **Intermediate Chinese I–II (4–4)** Staff
- Continuation of grammar, with emphasis on speaking, reading, and writing.
- Laboratory fee, \$50 per semester. (Academic year)
- 88 **E-learning Tools for Chinese (1)** Zhang
- Basic training for using computer programs, software, or web tools for Chinese word processing. Prerequisite: Chin 1. Laboratory fee, \$50. (Spring)
- 105–6 **Advanced Chinese I–II (3–3)** Zhang
- Continuation of reading of texts, essay writing practice, and oral presentation and discussion. Prerequisite: Chin 4 to 105, Chin 105 to 106. Laboratory fee, \$50 per semester. (Academic year)
- 107–8 **Readings in Modern Chinese (3–3)** Lee
- Readings in selected modern literary works, social science materials, and documentary materials. Prerequisite: Chin 106 or equivalent. (Academic year)
- 109–10 **Introduction to Classical Chinese (3–3)** Chaves
- Introduction to classical writings in Chinese literature, history, and philosophy.
- Prerequisite: Chin 4 or equivalent. (Alternate academic years)
- 111–12 **Chinese Literature in Translation (3–3)** Chaves
- An introductory course focusing on major works of poetry, drama, and the novel in their historical and social context. (Academic year)
- 121–22 **Advanced Conversation and Composition I–II (3–3)** Zhang and Staff

Productive skills at the extended discourse level, topic-specific practice of commonly used speech patterns and writing formats. Prerequisite: Chin 106 to 121, Chin 121 to 122, or permission of instructor. (Academic year)

123–24 **Introduction to Chinese Linguistics (3–3)** Lee

Introduction to the history of the Chinese language. Analysis of linguistic structure of modern spoken Chinese and classical Chinese. Lectures and discussion in English.

Prerequisite: Chin 4 or equivalent. (Alternate academic years)

136 **Chinese Women in Myth, Literature, and Film (3)** Frost

Women's position in Chinese cultural and political life from prehistoric myth to the present time. Confucian writing, traditional theatre, and films and novels set in China. A general survey of Chinese history establishes the context for discussions of cultural and political phenomena, such as foot binding and the one-child policy.

Same as WStu 136.

162 **Chinese Culture Through Film (3)** Frost

Survey of the Chinese cultural heritage presented through films. Topics include literature, philosophy, art, religion, and social history from prehistorical times to the modern era. Lectures and discussion in English. (Fall and spring)

171–72 **Poetry of the Tang and Song Periods (3–3)** Chaves

Reading of works of leading poets. Discussion of content and style. Prerequisite:

Chin 109 or equivalent. (Alternate academic years)

179–80 **20th-Century Chinese Literature (3–3)** Lee

Works of Lu Xun, Lao She, and others. Drama of Tian Han and Cao Yu.

Prerequisite: Chin 107 or equivalent. (Alternate academic years)

185–86 **Directed Reading (3–3)** Lee

Reading of material in the student's field of interest. Admission by permission of instructor. (Academic year)

198–99 **Proseminar: Readings for the Major in Chinese Language and Literature (3–3)**

Staff

Recommended for all majors. Preparation for advanced research in Chinese sources.

One-on-one tutorials, seminar meetings, and practice in consulting Chinese reference works, both traditional and modern. Literary criticism; keeping abreast of sinological scholarship. Prerequisite: Chin 106 to 198, Chin 198 to 199. (Academic year)

JAPANESE

1–2 **Beginning Japanese I–II (4–4)** Hamano and Staff

Fundamentals of grammar and pronunciation, with graded reading and practice in writing. Laboratory fee, \$50 per semester. (Academic year)

3–4 **Intermediate Japanese I–II (4–4)** Hamano and Staff

Continuation of grammar, with emphasis on speaking, reading, and writing.

Laboratory fee, \$50 per semester. (Academic year)

105–6 **Advanced Japanese I–II (3–3)** Hamano, Hanami

Continuation of reading of texts, writing of short pieces, conversation, systematic review of grammar. Prerequisite: Japn 4 to 105, Japn 105 to 106. Laboratory fee, \$50 per semester. (Academic year)

107–8 **Readings in Modern Japanese (3–3)** Hamano, Hanami

Readings in selected modern literary works, social science materials, and documentary materials. Prerequisite: Japn 8 or equivalent. (Academic year)

- 109 **Introduction to Bungo, Literary Japanese (3)** Hanami
- Introduction to Bungo, the literary Japanese used in official government documents up to World War II, newspapers and journals through the Meiji period, and literature from the prose of the Tales of Ise to the poetry of Tawara Machi. Prerequisite: Japn 106. (Fall)
- 110 **Readings in Classical Japanese (3)** Hanami
- Readings in premodern texts in Japanese literature, history, and philosophy. Prerequisite: Japn 109. (Spring)
- 111–12 **Japanese Literature in Translation (3–3)** Hanami
- An introductory survey of traditional and modern Japanese literature read in English translation: love and nature poetry; theater (classical drama, puppet plays); fiction; diaries. (Academic year)
- 121–22 **Advanced Conversation and Composition I–II (3–3)** Staff
- Productive skills at the extended discourse level, topic-specific practice of commonly used speech patterns and writing formats. Prerequisite: Japn 106 to 121, Japn 121 to 122. (Academic year)
- 162 **Japanese Culture Through Film (3)** Hanami
- Survey of the Japanese cultural heritage presented through films. Topics include literature, philosophy, art, religion, and social history from prehistorical times to the modern era. Lectures and discussion in English. (Spring)
- 185–86 **Directed Reading (3–3)** Hanami and Staff
- Reading of material in the student's field of interest. Admission by permission of instructor. (Academic year)

198–99 **Proseminar: Readings for the Major in Japanese Language and Literature (3–3)**

Staff

Recommended for all majors. Preparation for advanced research in Japanese sources.

Practice in consulting Japanese reference material and translating sources for writing in English. Seminars on advanced reading, translation, and critical methodology.

Prerequisite: Japn 106 to 198, Japn 198 to 199. (Academic year)

KOREAN

1–2 **Beginning Korean I–II (4–4)** Kim-Renaud

Fundamentals of grammar and pronunciation, with graded speaking, reading, and writing practice. Laboratory fee, \$50 per semester. (Academic year)

3–4 **Intermediate Korean I–II (4–4)** Kim-Renaud

Continuation of grammar, with emphasis on speaking, reading, and writing.

Laboratory fee, \$50 per semester. (Academic year)

105–6 **Advanced Korean I–II (3–3)** Kim-Renaud

Continuation of reading of texts, writing of short pieces, conversation, systematic review of grammar. Prerequisite: Kor 4 to 105, Kor 105 to 106. Laboratory fee, \$50 per semester. (Academic year)

107–8 **Readings in Modern Korean (3–3)** Kim-Renaud

Readings in selected modern literary works, social science materials, and documentary materials. Prerequisite: Kor 106 or equivalent. (Academic year)

111–12 **Korean Literature in Translation (3–3)** Kim-Renaud

An introductory survey of Korean literature read in English translation. Kor 111: traditional poetry, fiction, storytelling, drama, diaries. Kor 112: modern fiction, drama, poetry, essays. (Academic year)

162 **Korean Culture Through Film (3)** Finch

The intersection of gender, class, and nation in contemporary society through the lens of Korean film. English subtitles; lectures and discussion in English. (Spring)

VIETNAMESE

1–2 **Beginning Vietnamese I–II (4–4)** Staff

Fundamentals of grammar and pronunciation, with an introduction to reading and writing. (Academic year)

3–4 **Intermediate Vietnamese I–II (4–4)** Staff

Continuation of grammar, with emphasis on speaking, reading, and writing. (Academic year)

EAST ASIAN LANGUAGES AND LITERATURES

75 **East Asian Calligraphy (3)** Staff

Writing of Chinese characters with traditional writing implements. No knowledge of the language required. Covers the history, aesthetics, and philosophy of East Asian scripts and calligraphy and their relationships to paintings, seal carving, and literature. (Fall and spring)

182 **Religion and Philosophy in East Asia (3)** Staff

Same as Rel 182.

183 **Confucian Literature in East Asia (3)** Staff

Same as Rel 183.

184	Religion and Ethics in East Asia (3)	Staff
	Same as Rel 184.	
185	Daoism in East Asia (3)	Staff
	Same as Rel 185.	
186	Shamanism in East Asia (3)	Staff
	Same as Rel 186.	

ECONOMICS

Professors J.L. Gastwirth, R.M. Dunn, Jr., R.S. Goldfarb, A.M. Yezer, J.J. Cordes, J. Pelzman,
R.P. Trost, B.L. Boulier, H.S. Watson, M.D. Bradley, S.C. Smith, P. Labadie, G.L.
Kaminsky, D.O. Parsons (*Chair*), R.F. Phillips, D. Ribar, M.O. Moore, N. Vonortas, F.L.
Joutz

Associate Professors A.S. Malik, S.M. Suranovic, S. Joshi, W.P. Mullin, V. Fon

Assistant Professors D.M. Stryk, R.M. Samaniego, M. Cipriani, C. Wei, S. Emran, M.X. Chen,
A. Fostel, T. Sinclair

Adjunct Professors E.H. Solomon, S.N. Kirby

Professorial Lecturers R.S. Belous, D. Fixler, H. Hertzfeld, J. Kilpatrick, H. Stekler, F.D. Weiss

Associate Professorial Lecturer L. Clauser

Assistant Professorial Lecturers S.E. Baldwin, N. Pham, D. Trybula

Bachelor of Arts with a major in economics—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Econ 11–12.
3. Required courses in related areas—Math 21, 31, or 52; Stat 111 and 112, or equivalent; 6 credit hours of a social science other than economics.

4. Required courses in the major—Econ 101, 102, 121, 198, and five additional 100-level economics courses to be approved by the departmental advisor. A maximum of three regional courses (Econ 133, 169, 170, 185) can be counted toward the five additional courses. Of the three international courses (Econ 180, 181, and 182), only two may be counted toward the major.

Bachelor of Science with a major in economics—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Econ 11–12.
3. Required courses in related areas—Math 31 and 32, or equivalent; Stat 111 and 112, or equivalent; 6 hours of additional course work in mathematics, statistics, systems engineering, or computer science, to be approved by the departmental advisor (e.g., Math 33, 124, 125, 142; Stat 157, 158, 181, 183; EMSE 101, 102, 154, 173; CSci 123, 173, 174, 194).

4. Required courses in the major—Econ 101, 102, 121, 123, 198, and four additional 100-level economics courses to be approved by the departmental advisor. A maximum of three regional courses (Econ 133, 169, 170, 185) can be counted toward the four additional courses. Of the three international courses (Econ 180, 181, and 182), only two may be counted toward the major.

Five-Year Bachelor of Science with a major in economics and Master of Arts in the field of economics—Students interested in this dual degree program should consult the undergraduate program advisor in the Economics Department by the second semester of the sophomore year.

Five-Year Bachelor of Arts or Bachelor of Science with a major in economics and Master of Public Policy—Students interested in this dual degree program should consult the director of the Public Policy Program by the second semester of their sophomore year.

Special Honors—Students may apply for graduation with Special Honors. To be eligible, a student must meet the requirements for Special Honors stated under University Regulations,

must have a grade-point average of at least 3.5 in economics courses, and must submit an honors paper to the department. Upon review of the honors paper, the student may be recommended for graduation with Special Honors.

Minor in economics—(a) 18 credit hours in economics, including Econ 11–12, 101, 102, 121, and one other approved 100-level course in economics; (b) one of the following: 6 credit hours of an approved statistics sequence, such as Stat 111, 112; or 6 hours of an approved mathematics sequence, such as Math 31, 32; or one approved statistics course, such as Stat 111, and one approved mathematics course, such as Math 31 or 52; or one approved mathematics course or one approved statistics course and one additional 100-level course in economics (other than Econ 133, 134, 169, 170, 171, or 185). Stat 129 cannot be used to satisfy the requirements of the minor.

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

Departmental prerequisite: Econ 11–12 is prerequisite to all other courses offered by the Department of Economics.

- 11–12 **Principles of Economics** (3–3) Bradley, Dunn, Goldfarb, Trost, Samaniego, Yezer
Major economic principles, institutions, and problems in contemporary life. Econ 11: Microeconomics—supply and demand, the price system and how it works, competitive and monopolistic markets. Econ 12: Macroeconomics—national income concepts, unemployment and inflation, institutions of monetary control. Econ 11 is prerequisite to Econ 12. (Econ 11 and 12—fall and spring)
- 101 **Intermediate Microeconomic Theory** (3) Fon, Goldfarb, Joshi, Malik,
Parsons, Phillips, Watson

Analysis of household economic behavior, including derivation of demand functions.

Analysis of firm behavior, including derivation of supply frameworks. Demand and supply interaction under various market structures and in factor markets. (Fall and spring)

- 102 **Intermediate Macroeconomic Theory (3)** Bradley, Joutz, Labadie,
Sinclair, Soares, Wei

Investigation of the determinants of national income, inflation, unemployment, and interest rates. Alternative business cycle theories, with emphasis on the role of imperfect information, uncertainty, and expectations.

(Fall and spring)

- 104 **History of Economic Thought (3)** Staff

History of the major schools of economic thought, influence of changing problems on the development of economic theory. Prerequisite: Econ 101, 102.

- 105 **Economic Conditions Analysis and Forecasting (3)** Staff

Theory and empirical analyses of economic trends and fluctuations; use of economic indicators and simple econometric models. (Fall)

- 121 **Money and Banking (3)** Joutz, Labadie, Samaniego, Wei

The role of money, credit, interest rates, foreign exchange rates, and commercial banks and other financial institutions in the U.S. economy. (Fall and spring)

- 122 **Monetary Theory and Policy (3)** Staff

Analysis of classic and modern monetary theories and their application to current economic conditions. The links between theory and policy. The altered role of money over time; the new money technology. (Spring)

- 123 **Introduction to Econometrics (3)** Trost, Phillips, Ribar, Sinclair
- Joint offering of the Economics and Statistics Departments. Construction and testing of economic models: regression theory, parameter estimation, and statistical techniques applicable to economic models. Prerequisite: Math 31; Stat 112. (Fall and spring)
- 133 **Economies of the Former Soviet Union and Eastern Europe (3)** Staff
- Analysis of the transition process in the former Soviet Union and Eastern Europe. Topics include economic models of planned economies and comparative analysis of economic development programs of the newly independent states and Eastern Europe. (Fall)
- 136 **Natural Resources and Environmental Economics (3)** Malik
- Analysis of market mechanisms that allocate energy and natural and environmental resources; investigation of actual and optimal resource allocation across uses and time; review of arguments for public intervention. (Spring)
- 142 **Labor Economics (3)** Ribar, Parsons
- Analysis of labor supply and demand; measurement and theory of unemployment; occupational choice; wage differentials; labor market issues and policies. (Fall)
- 148 **Health Economics (3)** Staff
- Economic analysis of the determinants of demand, supply, output, and distribution in the health care sector, with special emphasis on current policy issues of access, quality, and cost. (Spring)
- 151 **Economic Development (3)** Smith, Emran

Theories and empirical studies of the economic problems of developing countries. (Fall and spring)

153 **Income Distribution (3)** Staff

An analysis of the distribution of income, with focus on issues relating to wealth and poverty. (Spring)

157 **Urban and Regional Economics (3)** Yezer

Analysis of the determinants of urban growth and development; firm location; the functioning of urban land and housing markets.

158 **Industrial Organization (3)** Snyder, Mullin

Analysis of market structure, conduct, and performance of firms in a market economy, with emphasis on case studies of U.S. industries. (Fall)

159 **Government Regulation of the Economy (3)** Snyder, Mullin

Economic analysis of antitrust and regulation in the American economy. Prerequisite: Econ 101 or 158. (Spring)

160 **Survey of Finance and Engineering Economics (3)**

Same as EMSE 160.

161 **Public Finance: Expenditure Programs (3)** Cordes, Watson

Economic analysis of government spending and social regulation programs. Topics include public goods, externalities, income transfer and social insurance programs, and benefit–cost analysis of government programs. (Fall)

162 **Public Finance: Taxation (3)** Cordes, Watson

Economic analysis of taxes and government deficits. Topics include individual and corporate income taxes, payroll taxes, sales and excise taxes, property and wealth

taxes, design of tax systems, and effects of taxation on labor and capital markets. (Spring)

165 **Economics of Human Resources (3)** Boulier

Economic analysis of education and training, labor market discrimination, marriage and the family, and social security. (Fall)

167 **Economics of Crime (3)** Yezer

Analysis of crime, both empirical and theoretical, that examines the links between law and economics, the economics of criminal participation, and the economics of law enforcement. (Spring)

169 **Introduction to the Economy of China (3)** Staff

Background, organization, and operation of the economy. Appraisal of performance and analysis of problems of development. (Fall)

170 **Introduction to the Economy of Japan (3)** Staff

Analysis of the structure and growth of the Japanese economy. (Spring)

180 **Survey of International Economics (3)** Moore, Suranovic

Basic concepts of international trade and international finance, with emphasis on policy issues.

181–82 **International Economics (3–3)** Dunn, Moore, Suranovic, Pelzman,
Chen, Fostel, Cipriani

Econ 181: International trade theory and policy. Econ 182: International macroeconomic theory and policy. (Academic year)

185 **Economic History and Problems of Latin America (3)** Staff

Analysis of present structures and problems of Latin American economies.

190 **Law and Economics (3)** Pelzman, Fon

An introduction to the economic analysis of legal systems. How laws alter behavior and how laws might be designed to satisfy efficiency and fairness criteria.

Prerequisite: Econ 101.

195 **Special Topics (3)** Staff

Topics vary, depending on current issues of interest and faculty availability.

198 **Proseminar (3)** Boulier, Bradley, Fon, Goldfarb, Parsons, Suranovic, Watson

Preparation and presentation of a research paper in any field of economics agreed upon by student and instructor. Review of selected topics in contemporary economics. Open only to economics majors in their senior year.

199 **Independent Research (3)** Staff

Prerequisite: Completion of 12 hours of 100-level economics courses, including Econ 101 and 102, with a minimum grade-point average of 3.4; and approval of an independent research project by a faculty member of the Economics Department.

EDUCATIONAL LEADERSHIP

Programs in educational leadership are offered at the graduate level by the Graduate School of Education and Human Development. The following courses are open to undergraduates.

104 **Psychology for Learning and Teaching (3)** Staff

Principles, theory, nature, and course of learning and teaching processes.

Examination and analysis of the strategies and dynamics of teaching and learning in behavioral settings. Thirty hours of fieldwork in an educational setting. (Fall and spring)

125 **Museums as Cultural and Educational Resources (3)** Staff

A general introduction to museums as institutions, sources of information, and places for enjoyment. Classes take place on campus and at museums in the metropolitan area. Admission by permission of instructor. (Spring)

180 **Computer Literacy (3)** Staff

Word-processing, desktop publishing, graphics, database management, spreadsheets, charting, and communications software are introduced through reading, demonstrations, and hands-on activities in a computer classroom. Use of the Internet and the web. No previous computer experience required. (Fall, spring, and summer)

ELECTRICAL AND COMPUTER ENGINEERING

Professors W.K. Kahn, H.J. Helgert, R.H. Lang, N. Kyriakopoulos, T.N. Lee, E. Della Torre,

R.J. Harrington, W. Wasylkiwskyj, N.A. Alexandridis, M.H. Loew, R.L. Carroll, Jr., M.E.

Zaghloul, M. Pardavi-Horvath, B.R. Vojcic, D. Nagel (*Research*), J.N. Pelton (*Research*), K.B.

Eom, C.E. Korman (*Chair*), T. El-Ghazawi, L. Bennett (*Research*), T.J. Manuccia

Associate Professors D. Saha, M. Doroslovacki, S. Subramaniam

Assistant Professors J.M. Zara, S. Ahmadi (*Research*)

Adjunct Professors A. Schneider, W.D. Jackson, D.M. Le Vine, H. Szu

Associate Professorial Lecturer M.R. Berman

See the School of Engineering and Applied Science for programs of study leading to the Bachelor of Science with majors in electrical engineering, computer engineering, and biomedical engineering.

1–2 **Introduction to Electrical, Computer, and Biomedical Engineering (1–1)** Korman and Staff

Basic and emerging concepts in electrical, computer, and biomedical engineering. Hands-on experiments and projects. Introduction to the professional literature and available resources and to technical writing, speaking, and presentation skills. (Academic year)

11 **Circuit Theory (4)** Zaghloul and Staff

Lecture (3 hours), laboratory (3 hours). Circuit elements, techniques of circuit analysis; circuit theorems; operational amplifiers; RLC circuits; natural and step responses; series, parallel and resonant circuits; sinusoidal steady-state analysis; phasers; power calculations; transformers; two-port circuits. CAD tools used in circuit projects.

Corequisite: ApSc 113, Phys 22. (Fall and spring)

12 **Circuits, Signals, and Systems (3)** Kyriakopoulos and Staff

Circuit analysis using Laplace transforms; transfer functions; poles and zeroes; Bode diagrams; effects of feedback on circuits; convolution; Fourier series and Fourier transforms; design of filters; CAD tools used in design of projects. Prerequisite: ECE 11, 117. (Fall and spring)

20 **Engineering Electronics (4)** Korman and Staff

Lecture (3 hours), laboratory (3 hours). Solid-state devices used in electronic engineering. Physics of their operation. Application to electronic circuits. Primary emphasis on application of these elements in power supplies and in linear amplifiers. Design concepts through use of SPICE and graphical techniques. Prerequisite: ECE 11. (Fall and spring)

30 **Introduction to Electromagnetics (3)** Lang and Staff

Maxwell's equations, pulse propagation in one dimension, transmission line equations, reflection coefficient, capacitance and inductance calculations, Smith chart, plane waves,

reflection from a dielectric of fiber and integrated optics. Prerequisite: ApSc 113, Phys

22. (Spring)

31 Fields and Waves I (3)

Kahn and Staff

Complex phasor notation, uniform transmission lines, standing wave ratio, power, reflection coefficient, impedance matching. Review of vector analysis and numerical methods. Electrostatics, generalizations of Coulomb's law, Gauss's law, potential, conductors, dielectrics, capacitance, energy. Prerequisite: ApSc 113; Phys 22. (Spring)

32 Fields and Waves II (3)

Kahn and Staff

Magneto-stationary fields, Lorentz force torques, Biot-Savart law, Ampere's law, magnetic materials, inductance, energy. Maxwell's equations, Faraday's law, charge-current continuity, vector potential. Time-harmonic fields, plane waves, polarization, skin effect, dielectric boundaries, and fiber optics. Radiation, dipole, gain, effective area. Prerequisite: ApSc 114, ECE 31. (Fall)

114 Analog Signals and Systems (3)

Lee and Staff

Applications of matrix theory and linear graphs to electrical network analysis; network equations; state-space formulation and solution, Fourier transforms and spectra in electrical systems. Network functions; analysis and synthesis of analog filters, the approximation problem; realization of filters. Prerequisite: ECE 12, 20. (Fall)

117 Introduction to Digital

Kyriakopoulos, Doroslovacki, and Staff

Signal Processing (3)

Signal representation, sampling and quantization, discrete-time signals, z-transforms and spectra, difference equations. Fourier analysis. Discrete Fourier transform, IIR and FIR filter design. Prerequisite: Math 32. (Spring)

121 Analog Electronics Design (4) Korman and Staff

Lecture (3 hours), laboratory (3 hours). Design, testing, and measurement of analog electronic circuits. Differential and multistage amplifiers. Output stages and power amplifiers. Frequency response of amplifiers, high-frequency models of FETs and BJTs. Introduction to feedback circuit topologies. Use of electronic CAD tools, such as P-Spice. Prerequisite: ECE 20. (Spring)

122 Digital Electronics and Design (4) Korman and Staff

Lecture (3 hours), laboratory (3 hours). Design and testing of logic gates, regenerative logic circuits, and semiconductor memory circuits. Implementation of such circuits with NMOS, CMOS, TTL, and other integrated circuit technologies. Use of electronic CAD tools, such as Spice. Prerequisite: ECE 20, 140. (Fall)

126 VLSI Design and Simulation (3) Zaghloul and Staff

Design of VLSI circuits. Stick diagramming, NMOS transistors, switch and gate logic, PLAs, finite-state machines, design rules, CAD system, speed and power considerations, floor planning, layout techniques. The student will design a VLSI circuit and simulate the design. May be taken for graduate credit. Prerequisite: ECE 122, 162. (Fall)

127 VLSI Fabrication Techniques (3) Zaghloul and Staff

Choice of circuit technologies, process technologies associated with various types of components. Fabrication of VLSI, two basic MOS technologies and other available technologies, oxidation, photoengraving, chemical etching, diffusion. May be taken for graduate credit. Prerequisite: ECE 122, 140. (Spring)

128 Design and Testing of VLSI Circuits (3) Zaghloul and Staff

ASIC design methodology, use of ASIC design CAD tools. Introduction to logic synthesis, styles of synthesis, power/area/speed constraints. Introduction to VLSI testing, fault models, design for testability techniques, scan path, JTAG, and built-in self-test. Students must test the chips previously designed in ECE 126. May be taken for graduate credit. Prerequisite: ECE 126. (Spring)

134 Fiber Optical Communication (3) Pardavi-Horvath and Staff

Lightwave fundamentals. Integrated optics. Optical fiber waveguides. Light sources and detectors. Distribution networks and fiber components. Modulation. Noise and detection. System design. Prerequisite: ApSc 114; ECE 30 or 32. (Fall, odd years)

140 Design of Logic Systems I (4) Zaghloul and Staff

Lecture (3 hours), laboratory (3 hours). Boolean algebra; combinational and sequential circuits; minimization techniques; design-and-build logic subsystems, such as decoders, multiplexers, adders, and multipliers; use of CAD tools. Corequisite: ECE 20. (Spring)

141 Microprocessors: Software, Hardware, and Interfacing (3) El-Ghazawi and Staff

Microprocessor architecture, assembly language, address decoding, hardware interrupt, parallel and serial interfacing with various circuits, timer/counters, direct memory access, microprocessor-based system. Hands-on laboratory experience is an integral part of this course. Prerequisite: ECE 140. (Fall)

143 Communications Engineering (3) Doroslovacki and Staff

Fourier series and Fourier transform in relation to signal analysis. Convolution and linear filtering. Signal bandwidth and sampling theorem. Analog modulation. Random variables and stochastic processes; power spectrum. Digital modulation: BPSK, QPSK, MSK.

Pulse code modulation, DPCM and delta modulation. Prerequisite: ApSc 115, ECE

12. (Spring)

144 Introduction to Computer Networks (3)

Doroslovacki and Staff

Types of networks. Circuit and packet switching. Layered network architectures.

Electrical interfaces. Parity checking and CRC error detection codes. Automatic-repeat-request protocols. Routing. Flow and congestion control. Multiple-access protocols. LAN standards. Internetworking and transport layer protocol—TCP/IP. ISDN, SONET, and ATM. Prerequisite: ApSc 115. (Spring)

146 Communications Laboratory (1)

Doroslovacki and Staff

Experiments supporting communications systems. Fourier analysis and Fourier transform. Sampling theorem, filtering, and aliasing. Amplitude modulation (AM), frequency modulation (FM), quantization, and pulse code modulation (PCM). Delta modulation. Binary phase shift keying (BPSK). Quadrature phase shift keying (PSK). Prerequisite or corequisite: ECE 143. (Spring)

147 Data Communications Laboratory (1)

Doroslovacki and Staff

Experiments in support of the analysis and design of communications systems with emphasis on network protocols. Time and frequency division multiplexing, flow control, automatic repeat request, interfacing, token ring, token bus, multiple access for Ethernet, routing, packet switching. Prerequisite or corequisite: ECE 144. (Spring)

148 Simulation of Communications Systems (3)

Vojcic and Staff

Representation and simulation of deterministic and random signals and systems.

Modeling of communication systems; performance measures and statistical methods for the interpretation of simulation results. Simulation techniques and technology in

communications. Case studies. Corequisite: ECE 144 or equivalent. May be taken for graduate credit. (Spring)

150 Introduction to Telemedicine (3)

Loew and Staff

Clinical applications; data dimensionality, acquisition, and conversion; transmission methods (wired, wireless); networking; compression; measurement of quality and accuracy; reception and display considerations; data archiving and retrieval; economic issues; user-interface considerations. Prerequisite: ECE 117; corequisite: ApSc 115. (Fall)

151 Signal and Image Analysis (3)

Loew and Staff

Introduction and clinical applications; characteristics of biomedical problems, time- and frequency-domain techniques for signal feature analysis; spectral estimation and analysis; autoregressive modeling; detection and estimation of periodicity; digital images as two-dimensional signals; 2-D Fourier transform. Corequisite: ECE 12, ApSc 115. (Fall)

153–55 Biomedical Engineering Seminar I–II–III (1–1–1)

Loew, Zara, and Staff

The courses are taken in sequence by students in the biomedical engineering major.

Students choose their specialty lab affiliation and participate in research projects of the lab. Journal club, written reports, and oral presentations. (Fall and spring)

156–58 Electrical, Computer, and Biomedical Engineering Capstone Project Lab I–II–III (1–3–2)

Korman and Staff

The courses are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project. (Fall and spring)

159 Biomedical Properties Laboratory (1)

Loew and Staff

Experiments are selected from the random walk model of diffusion, macroscopic diffusion processes, optical extinction in tissue, carrier-mediated transport (CMT), spectroscopy, hearing measurement, DNA identification, bioinformatics, and data mining. Prerequisite or corequisite: Phys 128. (Spring)

160 Modern Measurements and Sensors (3) Pardavi-Horvath and Staff

Measurement of dc, ac, and high-frequency signals. Interface electronic circuits. Sensors for measurement of mechanical, optical, magnetic, electromagnetic, thermal, chemical, and biochemical signals. Prerequisite: ECE 32, 121, 140. May be taken for graduate credit. (Spring, even years)

161 Introduction to Embedded Systems (3) El-Ghazawi and Staff

Microcontrollers and their application in embedded systems. Topics include assembly and C for microcontroller programming, serial and parallel I/O interfacing, and multimedia interfacing. Students perform laboratory experiments and a final project to develop a microcontroller-based embedded system. Prerequisite: CSci 49, ECE 141. (Spring)

162 Design of Logic Systems II (4) Zaghloul and Staff

Lecture (3 hours), laboratory (3 hours). Introduction of ASIC design techniques; design and programming of FPGAs using CAD tools; timing in sequential circuits; essential hazards; races in sequential circuits; design-and-build FPGA project. Prerequisite: ECE 140. (Fall)

166 Electrical Power Laboratory (1) Harrington and Staff

Experiments in support of the analysis and design of electrical power systems. Measurements of the characteristics of devices to generate electric power. Rectification

and inversion processes for power systems and drives. Prerequisite or corequisite: ECE 177. (Fall)

168 Microwave and Optics Laboratory (1) Lang and Staff

Experiments in transmission lines, network analyzer measurements of scattering parameters, microwave systems, fiber-optic systems and antennas. Introduction to the characteristics of laser and optical systems. Prerequisite: ECE 32. (Spring)

172 Control Systems Design (3) Carroll and Staff

Mathematical models of linear systems; steady-state and transient analyses; root locus and frequency response methods; synthesis of linear feedback control systems.

Prerequisite: ApSc 114, ECE 12 or MAE 134. (Fall)

176 Control Systems Laboratory (1) Carroll and Staff

Experiments in support of control theory, involving the use of the digital computer for process control in real time. Design of feedback and compensation with computer implementation. Digital simulation of linear and nonlinear systems. Prerequisite or corequisite: ECE 172. (Fall)

177 Electrical Energy Conversion (3) Harrington and Staff

Fundamentals of electromechanical energy conversion. Three-phase and single-phase AC rotating machines and transformers, DC machines, rotating machines as circuit elements, power semiconductor converters, machine dynamics. Prerequisite: ECE 12, 31. (Spring)

178 Electrical Power Systems (3) Harrington and Staff

Introduction to electrical power systems; transmission and distribution of electrical power, three-phase circuits, symmetrical components, fault analysis. Voltage, current,

and power limitations. Analysis of lightning and switching surges in power systems.

Protective devices—switchgear, arresters, and isolators. May be taken for graduate credit. (Fall)

181 Computer Organization (3)

Subramaniam and Staff

Structure and operation of a digital computer. Design of computer arithmetic units, data and instruction paths. Microprogramming; memory technology; virtual memory; caches; pipelined computer organization; characteristics of secondary storage; I/O interfacing.

Prerequisite: ECE 162; corequisite: ECE 161. (Spring)

182 Computer Architecture and Design (3)

Alexandridis and Staff

Design of bus-based digital computer systems, memory subsystems, caches, and multiple processors. Comparison of RISC and CISC processors and standard buses. Bus transfer and control signals. Performance, memory management, architectural support for protection, task switching, exception handling, instruction pipelines. Prerequisite: ECE 181. (Fall)

184 Introduction to Biomedical Engineering (3)

Loew and Staff

Terminology of the medical profession; anatomy and physiology of the human body, from overall system and functional approaches; survey of present-day medical measurements and consideration of those areas in which engineering may be applied advantageously to medicine. May be taken for graduate credit by students in fields other than medical engineering. (Fall)

186 Biomedical Engineering Laboratory (1)

Loew and Staff

Experiments in support of instrumentation used in medicine and biology; safety considerations. Acquisition and measurement of physiological signals (ECG, EEG,

evoked potentials). Processing and interpretation of signals derived from physiological measurements. Concepts in telemetry of medical signals. Prerequisite or corequisite: ECE 184. (Fall)

187 Introduction to Medical Imaging Methods (3) Zara and Staff

The most used imaging modalities, including ultrasound, X-ray, MRI, CT, SPECT, and PET. Study of each modality includes an overview of linear systems and their application to techniques, basic properties of an imaging system, the physics and instrumentation behind each modality, and the advantages, disadvantages, and applications. Prerequisite: ECE 117, 184. (Spring)

188 Introduction to Parallel and Distributed Computer Systems (3) El-Ghazawi and Staff

Shared and distributed memory computer systems. Parallel computation. Interprocess communication and synchronization. Terminal, file transfer, and message handling protocols. Algorithms for deadlock detection, concurrency control, and synchronization in distributed systems. Network security and privacy. Resource control and management. Prerequisite: ECE 181. (Spring)

192 Robotic Systems (3) Carroll and Staff

Modeling and analysis of robot designs. Kinematics of mechanical linkages, structures, actuators, transmissions, and sensors. Design of robot control systems, computer programming, and vision systems. Use of artificial intelligence. Current industrial applications and limitations of robotic systems. Same as MAE 197. Prerequisite: computer programming, ApSc 58, ECE 172. (Spring)

196 Robotics Laboratory (1) Carroll and Staff

Experiments illustrating basic principles and programming of robots and other automated machinery. Design and writing of computer programs to use a robot's arm, vision, and data files to accomplish tasks. Prerequisite or corequisite: ECE 192/MAE 197. (Spring)

197 **Special Topics** (1 to 3) Staff

Topic to be announced in the *Schedule of Classes*. (Fall and spring)

198 **Research** (1 to 3) Staff

Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status. (Fall and spring)

EMERGENCY HEALTH SERVICES

The Bachelor of Science in Health Sciences with a major in emergency health services is described briefly under the School of Medicine and Health Sciences in this Bulletin. Complete information on the degree and the associated secondary field is available from the School of Medicine and Health Sciences.

ENGINEERING MANAGEMENT AND SYSTEMS ENGINEERING

Professors R.M. Soland, R.C. Waters, E.L. Murphree, Jr., H. Eisner, J.R. Harrauld, S. Sarkani, G.

Frieder, T.A. Mazzuchi (*Chair*), J.P. Deason

Associate Professors M.R. Duffey, M.A. Stankosky, H. Abeledo, J.A. Barbera, J.R. van Dorp

Assistant Professors T. Jefferson, J.C. Ryan, M.P. Hamner, A. Bada, E. Campos-Nanez, F.

Fiedrich

Adjunct Professors R.R. Romano, G.M. Gerson

Professorial Lecturers W.A. Goetz, W.P. Henderson, F. Allario, C.R. Cothorn, D.J. Ryan, L.W.

Transeau, C.H. Voas, J.E. Collins, M.G. Goode, D.R. Skeen, F.A. Calabrese, J.F. Starns, R.C.

West, R.E. McCreight

Assistant Professorial Lecturers C.H. Bixler, T.H. Holzer, J.R. McCumber, D.R. Gallay, G.D. Haddow, J.W. Harris, Jr., C.L. Miller

See the School of Engineering and Applied Science for the programs of study leading to the Bachelor of Science with a major in systems engineering and Bachelor of Arts with a major in applied science and technology.

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|-----|--|------------------------|
| 1 | Introduction to Systems Analysis (1) | Mazzuchi, Soland |
| | <p>A survey of several aspects of systems analysis, including methodologies such as linear programming, network models, probability, and queuing theory, with applications to resource allocation, decision making, and statistical analysis. Spreadsheet and laboratory exercises and projects. (Fall)</p> | |
| 101 | Survey of Operations Research: Deterministic Models (3) | Abeledo and Staff |
| | <p>Deterministic optimization models and algorithms as applied to industrial and governmental decision making. Linear programming: models, the Simplex method, duality theory, sensitivity analysis. Network models: shortest path, transportation problem, assignment problem, flow problems. Integer programming; dynamic programming. Use of optimization software. Prerequisite: Math 32. (Fall)</p> | |
| 102 | Survey of Operations Research: Stochastic Models (3) | Campos-Nanez and Staff |
| | <p>Basic concepts and techniques of stochastic operations research modeling as applied to problems in industrial and governmental decision making. Markov chains, queuing, inventory, forecasting, reliability analysis, regression analysis, and simulation. Prerequisite: ApSc 115, Math 32. (Spring)</p> | |

- 109 **Mathematics in Operations Research (3)** Abeledo and Staff
- Mathematical foundations of optimization theory; linear algebra, advanced calculus, convexity theory. Geometrical interpretations and use of software. Prerequisite: Math 33. (Spring)
- 135 **Systems Thinking and Policy Modeling I (3)** Campos-Nanez and Staff
- Stock-flow analysis of feedback systems presented for policy analysis and management. System dynamics; principles of systems employed to structure the problem-solving process. Problems and case studies solved using microcomputers. (Fall)
- 154 **Applied Optimization Modeling (3)** Abeledo and Staff
- Analysis of linear, integer, and nonlinear optimization models of decision problems that arise in industry, business, and government. Modeling techniques and applications; use of optimization software to solve models. Prerequisite: EMSE 101 or permission of instructor. (Fall)
- 160 **Survey of Finance and Engineering Economics (3)** Duffey and Staff
- Survey of material relevant to financial decision-making for engineering activity. Includes traditional engineering economy topics; fundamentals of accounting; and financial planning, budgeting, and estimating applicable to the management of technical organizations. Same as Econ 160. (Fall, spring, and summer)
- 171 **Data Analysis for Engineers and Scientists (3)** Mazzuchi, van Dorp
- Design of experiments and data collection. Regression, correlation, and prediction. Multivariate analysis, data pooling, and data compression. Model validation. Prerequisite: ApSc 115. (Fall)

- 173 **Discrete Systems Simulation (3)** van Dorp and Staff
- Simulation of discrete stochastic models. Simulation languages. Random-number/random-variate generation. Statistical design and analysis of experiments, terminating/nonterminating simulations; comparison of system designs. Determination of input distributions. Variance reduction. Validation of models. Prerequisite: ApSc 115, CSci 51, or permission of instructor. Same as Stat 173. (Spring)
- 182 **Quality Control and Acceptance Sampling (3)** Mazzuchi and Staff
- Statistical approaches to quality assurance. Single and multivariate control charts, acceptance sampling by attributes and variables, process capability and design of experiments. Prerequisite: ApSc 115 or permission of instructor. (Spring)
- 191 **Systems Engineering Senior Project (3)** Soland and Staff
- Field experience in systems engineering on a team basis. Each small group confronts an actual problem and formulates a solution using systems engineering methods and models. Oral and written reports. Prerequisite or corequisite: EMSE 154, 171, 173, 182. (Spring)
- 198 **Research (1 to 3)** Staff
- Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status. (Fall and spring)

ENGLISH

Professors R.N. Ganz, Jr., J.A.A. Plotz, C.W. Sten, D. McAleavey, O.A. Seavey, L.B. Salamon, A. Romines, J.A. Miller, J. Shore, F. Moskowitz (*Chair*), M.D. Clair, M. Alcorn, J.J. Cohen, J.G. Harris

Associate Professors R.L. Combs, G. Carter, K. Moreland, D. Moshenberg, M.S. Soltan, T.G.

Wallace, J.M. Green-Lewis, P. Cook, P. Chu, G. Wald, P. Griffith, E. Schreiber, M. Frawley,
R. McRuer

Assistant Professors K. Daiya, J.C. James, H. Dugan, A. Lopez

Adjunct Assistant Professors D. Scarboro, E. Poliner, A.C. Stokes

Jenny McKean Moore Writer in Washington D. Roeser

Bachelor of Arts with a major in English—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Engl 40 or 51–52 or 61 and 62 or 91–92, or Hmn 1 and 2.
3. Required courses in related areas—second-year proficiency in a single foreign language, as demonstrated by completion of two years of college-level language study or the equivalent. (In the case of Latin, Latin 3 is sufficient.)
4. Required for the major—33 credit hours of 100-level English courses, including the following:
 - a) 9 hours in literature before 1800 (Engl 112, 113, 125, 127–28, 130, 131–32, 153, 155, 160)
 - b) Engl 120 and 3 additional hours in literary theory and/or cultural studies (Engl 124, 137, 175, 179, 186, 195, 196)
 - c) 3 hours in minority or post-colonial literature and tradition (Engl 139–40, 169, 173, 183, 184, 185, 187, 188)
 - d) 3 hours in 19th-century literature (Engl 133, 135–36, 154, 161, 162, 163, 165, 167, 183)
 - e) 3 hours in 20th- and 21st-century literature (Engl 137, 139–40, 158, 164, 166, 168, 169, 170, 173, 177–78, 184, 185, 187, 188)

With departmental approval, courses with appropriate subject matter may be substituted for those specified above.

Beyond the 24 specified hours, students take 9 additional hours of 100-level English courses, which may be in creative writing or composition. With approval of the English Department, 6 hours in the literature of a foreign language (either in the original language or in translation) may be substituted for English electives.

Special Honors—Majors in English who wish to be considered for Special Honors must meet the requirements listed under University Regulations; have maintained a 3.0 grade-point average; and apply for admission to the program, in writing, by October 15 of the junior year. Once admitted, the candidate must enroll in Engl 195 in the spring semester and in Engl 196 in the following fall semester. During the junior year, candidates must continue to maintain a 3.0 overall grade-point average and a 3.25 average in courses in the English Department. Subject to departmental approval, the candidate enrolls in Engl 194 or 198 in the spring semester of the senior year. To be eligible for graduation with Special Honors, candidates must earn an *A* or *A–* on the Honors Thesis and have achieved a 3.4 grade-point average in courses in the English Department.

Bachelor of Arts with a major in English and creative writing—Except for the requirement of a creative thesis, this major closely resembles the curriculum that is followed by an English major pursuing a creative writing minor. Admission to the major is restricted, and a separate application must be filed in writing prior to the senior year. No more than two students per thesis director are accepted per year.

The major in English and creative writing requires 39 credit hours of 100-level English courses, matching items 1 through 4(e) indicated under the Bachelor of Arts with a major in

English, with the additional requirements of Engl 81 as a prerequisite and 15 hours of 100-level creative writing courses, including 9 hours in the writing of either poetry or fiction and Engl 194.

Bachelor of Arts with a major in dramatic literature—The Department of Theatre and Dance and the Department of English offer an interdisciplinary major in dramatic literature. See Dramatic Literature.

Minor in English—Engl 40 or 51–52 or 61 and 62 or 91–92, or Hmn 1 and 2, and 15 hours of 100-level literature courses, chosen in consultation with an advisor in the department.

Minor in creative writing—Engl 81, 6 hours of an introductory literature sequence (e.g., Engl 51–52), and 15 hours of 100-level courses offered by the department, of which at least 12 must be in creative writing, including at least 9 hours in poetry (Engl 104, 107, and 117 or 181) or 9 hours in fiction (Engl 103, 106, and 116 or 181) or 6 hours in playwriting (Engl 105, 108).

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

Departmental prerequisite: A 3-credit-hour literature course, such as Engl 40 through 92, is prerequisite to all 100-level English courses with the exception of Engl 111, 160, 161, 162, 183, and 184.

EXPOSITORY WRITING

- | | | |
|-----|---|-------|
| 100 | Intermediate Expository Writing (3) | Staff |
| | Concentration on perfecting the skills of addressing a variety of audiences, focusing and organizing the essay, varying tone and method of discourse, and using appropriate vocabulary in several subjects. Texts and topics vary. Prerequisite: UW 20 or equivalent. Limited to 15 students. | |
| 101 | Advanced Writing (3) | Staff |

Individualized instruction and frequent conferences; writing projects vary with each student according to needs and interests. Emphasis on developing professional work habits. Prerequisite: UW 20, or written permission of instructor. Limited to 15 students. (Fall and spring)

111 **Preparation for Peer Tutors in Writing (3)** Schreiber

For undergraduates accepted as tutors in the Writing Center: study and practice of techniques for prewriting, writing, and revision; readings on collaborative learning, the composing process, composition theory, cognitive psychology, critical thinking, and the teaching of writing; observation and exercises in writing, peer review, and tutoring. (Fall)

CREATIVE WRITING

81 **Introduction to Creative Writing (3)** McAleavey and Staff

An exploration of genres of creative writing (fiction, poetry, and/or playwriting).

Basic problems and techniques; examples of modern approaches; weekly writing assignments; workshop and/or conference discussion of student writing. Limited to 15 students. (Fall and spring)

103 **Intermediate Fiction I (3)** Moskowitz, Clair, Griffith, and Staff

The writing of fiction. Prerequisite: Engl 81 or equivalent and two semesters of literature courses. Limited to 15 students. (Fall and spring)

104 **Intermediate Poetry I (3)** McAleavey, Clair, Shore, and Staff

The writing of poetry. Prerequisite: Engl 81 or equivalent and two semesters of literature courses. Limited to 15 students. (Fall and spring)

105 **Fundamentals of Dramatic Writing (3)** Griffith

Same as TrDa 105. A workshop in playwriting and screenwriting, with emphasis on dramatic structure. Prerequisite: Engl 81 or equivalent and two semesters of literature courses. Limited to 15 students. (Fall)

106 **Intermediate Fiction II (3)** Moskowitz, Clair

The writing of fiction. Prerequisite: Engl 103 or equivalent. Limited to 15 students. (Fall and spring)

107 **Intermediate Poetry II (3)** McAleavey, Clair, Shore

The writing of poetry. Prerequisite: Engl 104 or equivalent. Limited to 15 students. (Fall and spring)

108 **Intermediate Dramatic Writing (3)** Griffith

Same as TrDa 108. A workshop developing scripts for both theatre and film.

Prerequisite: Engl 105 or equivalent. Limited to 15 students. May be repeated for credit with departmental approval. (Spring)

116 **Advanced Fiction (3)** Moskowitz, Clair

Further workshop study of the writing of fiction. Prerequisite: Engl 106 or equivalent. Limited to 15 students. May be repeated for credit with departmental approval. (Spring)

117 **Advanced Poetry (3)** McAleavey, Shore

Further workshop study of the writing of poetry. Prerequisite: Engl 107 or equivalent. Limited to 15 students. May be repeated for credit with departmental approval. (Spring)

181 **Creative Writing Workshop (3)**

Taught by the Jenny McKean Moore Writer in Washington; open to undergraduates and graduate students. Prerequisite: a 100-level creative writing course. May be repeated for credit, if taught by a different instructor. Limited to 15 students. (Fall and spring)

182 Special Topics in Creative Writing (3) Clair, McAleavey, Moskowitz, Shore, Griffith

Topics announced in the Schedule of Classes; may be repeated for credit provided the topic differs. Topics of projected courses include poetry and poetics; forms and methods in fiction; forms and methods in poetry; memoir and personal narratives; creative nonfiction; "Literature, Live!"; avant-garde and experimental writing. Limited to 15 students.

194 Creative Writing Senior Thesis (3) Clair, McAleavey, Moskowitz, Shore, Griffith

Under the guidance of an instructor, the student composes an original manuscript of poetry or short fiction accompanied by an essay situating the student's work in the contemporary context. Open only to seniors admitted to the English and creative writing major. (Fall and spring)

ENGLISH AND AMERICAN LITERATURE

40 Critical Readings (3)

Staff

Thematic introduction to major topics and texts of literatures in English, including canonical and non-canonical works, with attention to important critical and historical developments. Topics vary by instructor.

51–52 Introduction to English Literature (3–3)

Plotz, Salamon, and Staff

Representative works by major authors studied in their historical context; discussion of recurrent themes and introduction to various types and forms of imaginative literature.

Engl 51; Middle Ages through the 18th century. Engl 52: 19th and 20th centuries. (Academic year)

61 **Tragedy (3)** Carter

Modes of tragedy as developed in drama, nondramatic verse, and prose fiction in literature from ancient to modern times—Book of Job to Beckett.

62 **Comedy (3)** Staff

Modes of comedy as developed in drama, nondramatic verse, and prose fiction—Chaucer to Borges.

71–72 **Introduction to American Literature (3–3)** Seavey, Combs, Moreland, and Staff

Historical survey. Engl 71: From early American writing through Melville, Whitman, and Dickinson. Engl 72: From Twain, James, and Crane to the present. (Academic year)

91–92 **Survey of Postcolonial Literature (3–3)** Plotz, Daiya, and Staff

Introduction to postcolonial literature from the perspectives of colonizer and colonized in Great Britain, India, Pakistan, Bangladesh, Sri Lanka, Australia, New Zealand, Canada, Anglophone Africa, and the Caribbean region; literature written on the wing, in diaspora. (Academic year)

112 **Chaucer (3)** Cohen

Chaucer's major works seen as exciting, lively texts from the modern perspective and as products of specific economic, social, and cultural trends of the late 14th century. Focus on *The Canterbury Tales*, read in the original Middle English.

113 **Medieval Literature (3)** Cohen

Readings from a wide range of medieval genres, including romances, saints' legends, mystical narratives, lyrics, civic drama, and social satires, to explore some of the

principal concerns of medieval culture. How these texts responded to and shaped changing patterns of medieval culture, as the clergy, the aristocracy, and the urban bourgeoisie attempted to define a culture of their own.

120 **Critical Methods** (3)

Alcorn, Cook, Harris, James, McRuer

The topics and techniques of literary analysis, applied to English and American poetry, prose fiction, and drama. Attention to stylistic and structural analysis, narratology, and critical theory applied to specific literary texts. (Fall and spring)

124 **Play Analysis** (3)

Staff

Same as TrDa 124. Traditional and nontraditional (Aristotelian and non-Aristotelian) approaches to the analysis of dramatic literature; literary and theatrical techniques used by playwrights. (Spring, odd years)

125 **The English Renaissance** (3)

Salamon, Dugan

Verse and prose written in the period 1515–1625, examined in relation to continental culture and to the social institutions that shaped English culture. More, Sidney, Spenser, Shakespeare, Donne, Jonson, Bacon, Herbert considered in relation to Petrarch, Castiglione, Ariosto, Erasmus, Montaigne, Labé, Descartes.

127–28 **Shakespeare** (3–3)

Salamon, Harris, Dugan

Close study of six or seven plays each semester, with emphasis on the texts in history and ideology. Survey of current critical practices (feminist, materialist, psychoanalytic) and examination of Shakespeare as a cultural institution.

(Academic year)

129 **Topics in Shakespeare Studies** (3)

Salamon, Cook, Harris, Dugan

Critical study of a particular aspect of Shakespeare's work, or of a distinctive approach to the plays. Projected topics: Shakespeare on film, the history plays and Elizabethan England, 18th century rewritings of Shakespeare, Shakespeare as poet, cultural materialist readings of Shakespeare.

130 **Milton** (3) Cook

Study of the major works in verse and prose, following the course of Milton's career. (Spring)

131–32 **The 18th Century: Literature and Authority** (3–3) Wallace, Seavey

Readings in significant 18th-century English writers—Dryden, Swift, Pope, Johnson, and others—with emphasis on tracing the ways in which literary texts contain, perpetuate, and subvert social and political ideologies.

133 **The Romantic Movement** (3) Plotz

Major figures and topics in English and Continental romanticism: Blake, Wordsworth, Coleridge, Lamb, Byron, Shelley, Keats, Hazlitt, DeQuincey, and others.

134 **Children's Literature** (3) Plotz

Nineteenth- and twentieth-century children's texts that illuminate the several worlds of childhood: the "small world" of childhood perception, the larger world of social and historical forces, and the "secondary world" of fantasy.

135–36 **Victorian Literature** (3–3) Carter, Frawley

Engl 135: 1830–1865—E. Brontë, Dickens; Tennyson, Browning, Arnold; Darwin, Carlyle, Ruskin. Engl 136: 1865–1900—Eliot, Hardy, Conrad; Swinburne, the Rossettis, Morris; Pater, Wilde, the Nineties.

137 **Modernism** (3) Soltan, Green-Lewis

The emergence of modernist experimentation (and the sense of epistemological and moral crisis it expressed) in the poetry and prose of Pound, T.S. Eliot, Woolf, Kafka, and others.

139–40 **20th-Century Irish Literature** (3–3)

Soltan and Staff

Irish writers from the time of the Literary Revival in the late 19th century to the present.

Engl 139: Yeats and other Irish poets and playwrights of his time and after—Synge, O’Casey, Kavanagh, Heaney, and others. Engl 140: Joyce through *Ulysses* and other fiction writers of later generations—O’Brien, Beckett, and others. (Academic year)

153–54 **The English Novel** (3–3)

Wallace, Soltan

Engl 153: The 18th century—Defoe, Richardson, Fielding, Sterne, and others. Engl 154: The 19th century—Austen, the Brontës, Dickens, George Eliot, Hardy, and others. (Academic year)

155–56 **The English Drama** (3–3)

Cook, Harris, Dugan

Engl 155: Shakespeare’s contemporaries. Engl 156: Historical survey, 1660 to present.

158 **Contemporary Drama** (3)

Staff

Examines drama written since 1960 in the light of postmodernism as both a literary and a theatrical theory. Explores the ways contemporary playwrights and directors challenge the perceptions and assumptions of today’s audience.

160 **Early American Literature and Culture** (3)

Seavey

The shaping of America’s early literary and cultural traditions as shown by significant writers of the colonial and early national periods: Bradstreet, Cotton Mather, Edwards, Franklin, Crèvecoeur, and others. (Fall)

161 **American Romanticism** (3)

Sten, Seavey

The shaping of America's literary and cultural traditions as shown by significant writers of the Romantic era: Poe, Emerson, Hawthorne, Melville, Thoreau, Whitman, Dickinson, and others. (Spring)

162 **American Realism** (3)

Romines

The shaping of America's literary and cultural traditions as shown by significant writers of the Realist school: Twain, James, Crane, Howells, Wharton, Chopin, Robinson, and others. (Fall)

163–64 **American Poetry** (3–3)

Combs, McAleavey

Close examination of major American poems. Engl 163: From the beginnings to the early 20th century: works by Poe, Emerson, Whitman, Dickinson, and others. Engl 164: Since the early 20th century: Frost, Eliot, Stevens, Bishop, Hughes, Ashbery, and others.

165–66 **American Drama** (3–3)

Combs

Engl 165: 19th-century melodrama and the emergence of realism; works by O'Neill and other dramatists of the early 20th century. Engl 166: Developments in modern American drama since World War II, including works by Williams, Miller, Albee, Shepard, Rabe, Guare, Mamet, Henley, Wasserstein, Shange, Hwang, Wilson, and others.

167–68 **The American Novel** (3–3)

Moreland, Sten

Historical and critical study of major works in the American novelistic tradition. Engl 167: From the beginnings through the 19th century: Hawthorne, Melville, James, Twain, Dreiser, and others. Engl 168: The 20th century: Wharton, Cather, Anderson, Hemingway, Fitzgerald, Faulkner, Wright, R.P. Warren, Nabokov, and others. (Academic year)

169 **Ethnicity and Place in American Literature** (3)

Chu, Miller, James, Lopez

The relationships among ethnic identity, authorship, regional setting, and national consciousness. Differences in the literary culture of ethnically, racially, and regionally diverse American populations; how considerations of ethnicity and place have been reshaping the American literary canon. Texts and emphases vary with instructor.

170 **The Short Story (3)** Combs

An extensive survey of short fiction by a wide variety of writers of the 19th and 20th centuries, about half of them American; readings on the art of the short story by writers and literary critics.

171 **Major Authors (3)** Staff

In-depth studies of a single figure or two or three authors (of British, American, or other nationality) who have written in English. Topics announced in the *Schedule of Classes*; may be repeated for credit provided the topic differs.

172 **Selected Topics in Literature (3)** Staff

Topics announced in the *Schedule of Classes*; may be repeated for credit provided the topic differs. Topics of projected courses include the Bloomsbury group; southern literature; the picaresque; literature of the Holocaust; literature and politics; Freud, Dostoevsky, and Shakespeare.

173 **Selected Topics in Post-Colonial Literature (3)** Plotz, Daiya

Historical, critical, and theoretical study of post-colonial literatures—African, Asian, Commonwealth—written in English. Topics vary with instructor; may be repeated for credit provided the topic differs.

175 **Gender and Literature (3)** Romines, Wald, McRuer

Symbolic representations of culturally defined roles and assumptions in literature. Male and female gender roles as fundamental to culture; the representation of culture, in literature especially and in the arts and humanities generally.

177–78 **Contemporary American Literature** (3–3) Moskowitz, Chu, Moreland

Engl 177: Tradition and innovation in fiction, memoir, and poetry of the 1950s and '60s: Bishop, Creeley, Ginsberg, Johnson, Kerouac, Levertov, Baldwin, Barth, Kingston. Engl 178: Aspects of multicultural American identities in bildungsroman, memoir, poetry, and drama of the 1970s, '80s, and '90s: Guterson, Murayama, Tan, Brooks, Cisneros, Rodriguez, Silko, Alexie, Rich.

179 **Special Topics in Literary Theory and/or Cultural Studies** (3) Alcorn, McRuer, Moshenberg, Wald, Chu

Selected topics in the diverse theoretical methodologies and interdisciplinary studies that characterize contemporary English and American literary studies. May be repeated for credit provided that topic differs.

183 **Literature of Black America I** (3) James, Miller, Wald

Survey of African American literature from the 18th through the late 19th centuries, in such cultural contexts as the developing concept of “race.” Attention to several genres, including slave narratives, and current criticism.

184 **Literature of Black America II** (3) Miller, Wald

Survey of African American literature from the early 20th century to the present day, in such cultural contexts as the “New Negro” Renaissance and the civil rights and Black Power movements. Attention to several genres, with emphasis on fiction and drama.

185 **Topics in African American Literary Studies** (3) James, Miller, Wald

Intensive study of a single aspect of African American literature: major authors, genre, theme, movement. Substantial attention to the critical tradition.

186 **Cultural Theory and Black Studies** (3) James, Miller, Wald

Selected topics in critical and cultural theories—often interdisciplinary—as used in understanding African American literature and culture. Topics may include genre, period, social change, and leading contemporary African American thinkers/writers.

187 **Asian American Literature** (3) Chu

How Asian American writers claim America and construct their identities in dialogue with shifting ideas of “America.” Topics addressed: Asian American history, gendering subjects, orientalism and postcolonial subjectivity, interracial relations, canonization.

Representative writers: Kingston, Hwang, Okada, Chang-rae Lee, Okja Keller, Lahiri, Bulosan, Hagedorn.

188 **Jewish American Literature** (3) Moskowitz

One hundred years of Jewish American writing in fiction, autobiography, poetry, drama, and non-fictional prose. The immigrant experience, American philosemitism and antisemitism, the Holocaust and after, the New York intellectuals, Jewish feminism, and the patriarchal tradition.

195–96 **Honors Seminar** (3–3) Green-Lewis, Soltan, Wallace

Genre and genre theory; literature as cultural artifact and as instrument of cultural criticism; various critical approaches—ideological, historical, and ahistorical. Open only to second-semester junior and first-semester senior honors candidates in English. (Engl 195: spring; Engl 196: fall)

197 **Independent Study** (3) Moskowitz and Staff

For exceptional students, typically majors, whose academic objectives are not accommodated in regular courses. Students must obtain the chair's approval and arrange for supervision by an appropriate member of the department. (Fall and spring)

198 **Honors Thesis (3)** Staff

Under the guidance of an instructor, the student writes a thesis on an approved topic.

Open only to senior honors candidates in English. (Fall and spring)

199 **Internship: Research, Writing, Editing (1 to 4)** Salamon

Position of responsibility with a publication, educational project, firm, or cultural organization offering practical experience in research, writing, editing, etc. Restricted to junior and senior English majors; approval of supervising faculty required for registration. May be repeated for credit; a maximum of 3 credits may be counted toward the English major. *P/NP* grading only.

ENGLISH AS A FOREIGN LANGUAGE

Director of the Language Center M.R. Gonglewski

5 **Introduction to Academic Writing for Undergraduates (0)** Siczek

Introduction to the research/writing process. Practice in reading university-level materials and reading-based writing. Focus on revision and editing. Eight class hours per week.

Tuition is charged at the rate of 4 credit hours.

15 **American Multicultural Perspectives in Washington, D.C. (3)** Siczek and Staff

A writing-intensive course that explores the capital's rich multicultural heritage through texts and community resources. Designed to represent the pedagogy of the American university experience through critical reading, inquiry, and discussion. Upon successful

completion of EFL 15, students will go on to take UW 20. Prerequisite: EFL 5 or placement into EFL 15. Laboratory fee, \$25.

46 EFL Tutorial (0) Staff

Individualized instruction in specific skill areas. Departmental approval required. Tuition is charged at the rate of 1, 2, or 3 credit hours, for 1, 2, or 3 hours of instruction per week, respectively.

110 Academic Writing and Research for Graduate Students I (0) Mueller

The research/writing process. Practice in reading university-level materials and reading-based writing. Focus on revision and editing. Eight class hours per week. Tuition is charged at the rate of 4 credit hours.

111 Academic Writing and Research for Graduate Students II (3) Mueller

Academic writing and advanced research course for students who demonstrate high proficiency in English. Small group work and oral presentations on research.

ENVIRONMENTAL STUDIES

For information on the major in environmental studies, contact the Geography Department.

EXERCISE SCIENCE

Professors P.A. Sullivan (*Acting Chair*), W.C. Miller

Associate Professors J.V. Danoff, B.J. Westerman

Assistant Professor T. Miller

Instructor L. Washington

Adjunct Associate Professors E.D. Schulken, L.F. Hamm

See the School of Public Health and Health Services for programs of study leading to the Bachelor of Science with majors in exercise science and athletic training. Excluding courses

specified as for departmental majors only, the exercise science courses that follow are available to undergraduates in other schools and may be used toward a secondary field in exercise science.

EXERCISE SCIENCE

50 Emergency Procedures and Safety Skills (2)

Introduction to common safety principles, predisposing factors and common causes of accidents, injuries, and illnesses. This is an American Red Cross certification course in cardiopulmonary resuscitation, use of an automated external defibrillator, and first aid.

Laboratory fee, \$25.

101 Topics (1 to 3)

Topic announced in the *Schedule of Classes*. May be repeated for credit provided the topic differs.

102 Introduction to Athletic Training (3)

Introduction to the profession of athletic training. Exploration of topics related to athletic training and sports medicine.

103 Professional Foundations in Exercise Science (3)

Nature, scope, and scientific basis of exercise and sport science: orientation to professional competencies and opportunities.

105 Drug Awareness (3)

Analysis of the complex role that drugs play in contemporary society and the ethical, legal, socioeconomic, and health issues that surround their therapeutic and recreational use.

107 Personal Health and Wellness (3)

A survey of the various components involved in personal health and wellness, such as personal fitness, sexuality, mental health, and environmental health. Emphasis is on application of knowledge through the use of decision-making and behavior modification skills.

109 Aerobic Exercise Testing and Prescription (3)

The adaptations of human physiological systems to various methods of aerobic exercise. Cardiorespiratory adaptations to endurance exercise training and how these adaptations provide a prophylaxis to cardiovascular and metabolic disease. Prerequisite: ExSc 50, 152.

110 Anaerobic Exercise Testing and Prescription (3)

The adaptations of human physiological systems to various methods of anaerobic training. Neuromuscular adaptations to strength and power training; primary focus on athletic populations. Design of training programs. Prerequisite: ExSc 50, 152. Laboratory fee, \$40.

120 Body Image in the Concept of Health (3)

Background and concepts of body dissatisfaction, disordered eating, food preoccupation, and exercise obsession.

121 Current Concepts in Nutrition and Health (3)

Basic nutritional concepts and their relation to health and disease.

123 Developing Health and Fitness Programs (3)

An introduction to program planning, with concepts and theories relevant to the adoption and maintenance of physically active lifestyles and the selection and implementation of

successful health and fitness programs. Methods and strategies appropriate for use at the individual, community, and policy level.

125 Human Sexuality (3)

Biological and developmental aspects of human sexuality; psychological and emotional aspects of sexual behavior; sexual identity; social forces affecting sexual issues; and research trends in the area of human sexuality.

126 Medical Issues in Athletic Training (3)

General medical issues and pharmacology as they relate to the profession of athletic training. Laboratory fee, \$40.

133 Issues in Alternative Medicine (3)

Various modalities of alternative/complementary/integrative therapy. Critical analysis and evaluation of the many dimensions of these approaches.

134 Sport and Nutrition (3)

The nutrition needs for recreational exercise and sports; skills in assessing nutrition needs; development of individual nutrition programs that are sport/activity-specific; and identification and correction of nutrition problems affecting sports performance.

135 Sport and the Law (3)

Basic principles of the law as it applies to amateur and professional sports. Legal issues and their ramifications.

136 Issues in Women's Health (3)

An introduction to health promotion and disease prevention pertaining especially to diseases, disorders, and conditions that are more prevalent among or unique to women or

for which risk factors or interventions may differ for women and men. Topics are covered from epidemiological, sociocultural, historical, and behavioral perspectives.

137 Athletic Training Administration (3)

Standards, policies, and practices of organization, supervision, and administration of athletic training programs.

138 Administration of Health and Fitness Programs (3)

Basic principles related to the administration of programs in the fitness, exercise, sport and sports medicine fields.

139 Principles of Coaching (3)

Study of coach/athlete behavioral patterns and interactions, coaching methods, and interdisciplinary principles applicable to coaching.

140 Exercise and Sport Psychology (3)

Study of psychological aspects of sport participants, athletes, teams, and competition in sport situations, including personality, motivation, performance level, achievement, and behavioral change strategies; social factors, training events, and measurement techniques.

Prerequisite: Psyc 1.

141 Psychology of Injury and Performance (3)

For athletic training majors only. A study of various areas within the behavioral sciences related to the rehabilitation and prevention of injuries and the injured physically active individual.

142 Physical Activity, Health, and Behavior Change (3)

The relation of behavioral factors to health and disease. The role of physical activity in the prevention of chronic disease and disability. Health behavior theories and cognitive behavioral approaches to health behavior change.

145 Working, Stress, and Human Values (3)

Recognition, prevention, and control of stress and the burnout syndrome. A humanistic inquiry into values, attitudes, and stressors associated with various professions.

Admission by permission of instructor.

146 Stress Management, Burnout, and Human Potential (3)

The nature, prevention, and control of the stress and burnout syndrome. Students will design an overall stress management strategy that incorporates achievement of life goals and human potential in a stress-efficient manner. Admission by permission of instructor.

151 Kinesiology (3)

Analysis of human movement with emphasis on the biomechanics of exercise and sport movement patterns. Prerequisite: ExSc 154 or equivalent, an approved course in anatomy.

152 Physiology of Exercise (3)

The physiological functions of the body and the effect of exercise on these functions.

Prerequisite: ExSc 154–55.

154–55 Applied Anatomy Physiology I–II (4–4)

Fundamentals of human anatomy and physiology for students preparing for health sciences professions. Emphasis on bones, joints, muscles, innervation, and blood supply.

Laboratory fee, \$40 per semester. Prerequisite to ExSc 155: ExSc 154.

158 Prevention and Care of Injury (3)

Information and practical experience in preventing, recognizing, and treating injuries that occur in physically active individuals. Prerequisite: ExSc 50, 154–55 or equivalent.

159 Injury Assessment (4)

Information and practical experience in the evaluation and assessment of orthopedic and other injuries. Prerequisite: ExSc 158. Laboratory fee, \$40.

160 Orthopaedic Taping and Bracing (1)

Laboratory complement to ExSc 158; required for athletic training majors.

161–64 Athletic Training Practicum (3–3–3–3)

For athletic training majors only. Practical clinical experience and application of athletic training skills. Laboratory fee: for ExSc 161, \$25; for ExSc 163, \$10; for ExSc 164, \$35.

168 Therapeutic Modalities in Sports Medicine (4)

Explanation and demonstration of the use of therapeutic modalities on the healing process, including discussion of the use of therapeutic modalities to enhance the rehabilitation process after athletic injury. Prerequisite: ExSc 159 or permission of instructor. Laboratory fee, \$40.

169 Therapeutic Exercise in Sports Medicine (4)

Discussion and application of general rehabilitation techniques to specific athletic injuries, including evaluation, implementation, and follow-up after specific joint injuries. Prerequisite: ExSc 159 or permission of instructor.

171 Issues in Exercise Science (3)

Study of current literature with implications for exercise and sport science specializations; use of library resources and retrieval systems; evaluation of professional competencies. For senior exercise science majors only.

173 Independent Study (1 to 3)

For departmental majors only. Individually designed model for intensive study in an area of special interest. Prerequisite: demonstrated competency for independent work and permission of advisor and instructor. May be repeated for credit.

175 Internship (1 to 9)

For departmental majors. Admission by permission of advisor.

EXERCISE AND SPORT ACTIVITIES

With the exception of undergraduates enrolled in the School of Public Health and Health Services, credit for exercise and sport activities courses is not recognized for the baccalaureate. The University is not responsible for injuries received in any of the activities of these courses, and the student assumes full responsibility therefor.

10 Badminton (1)

Students learn the mechanics of the basic skills and practice to improve the execution of a variety of serves, serve returns, clears, drops, drives, and smashes. Strategy for singles, doubles, and mixed doubles play.

20 Beginning/Intermediate Golf (1)

All aspects of the game of golf and its rules. Fundamentals of the golf swing, the short game, and course management. On-course experience. Course fee, \$60.

21 Foil Fencing (1)

Basic positions and fundamental movements of foil fencing; overview of the entire sport.

22 Basketball (1)

Fundamental skills, practice, rules, and scoring.

24 Volleyball (1)

Fundamental skills, practice, rules, and scoring.

26 Karate (1)

Introduction to Shotokan Karate, with an emphasis on realistic self-defense and development of the mind–body connection. Basic stances, blocks, and strikes of Shotokan.

27 Beginning/Intermediate Tennis (1)

Basic components and techniques, with opportunities to practice and demonstrate tennis skills by performing drills and playing matches against fellow classmates.

28 Massage (1)

Physiological effects of stress on the muscular system and how massage is used to address these effects. Proper technique and application of Swedish Massage strokes and other related therapies. Course fee, \$10.

29 Yoga (1)

Introduction to Hatha Yoga; basic postures and breathing.

30 Fitness—Selected Activities (1)

31 Weight Training (1)

Weight training techniques and related concepts of anatomy, nutrition, and exercise physiology. Emphasis on safety, form, benefits, and personal goals.

32 Aqua Aerobics (1)

Aerobic conditioning, muscle toning, and increased flexibility using water resistance.

Emphasis on the positive impact of regular physical fitness.

33 Swimming (1)

Basic components of swimming and development of proper stroke mechanics in the four styles of swimming: freestyle, backstroke, breaststroke, and butterfly.

37 Indoor Soccer (1)

Technical and tactical aspects of the sport are addressed.

38 Racquetball (1)

Rules, basic skills, and strategies.

39 Cardio-Kick-Boxing (1)

Exposure to a variety of hand and foot techniques from boxing and traditional martial arts, with an emphasis on learning to work out at a safe and challenging level for improved strength, flexibility, and cardiorespiratory fitness.

40 Self-Defense and Personal Safety (1)

Development of an understanding of assault and the wide range of options for self-defense. Drills of verbal assertiveness, concentration/relaxation, and physical defense. Concepts of alignment, balance, and the mechanics of generating force.

41 Mat Pilates (1)

Basic understanding of the principles of Pilates, including postural alignment, breathing techniques, strengthening, and stretching.

42 Aerobics (1)

A variety of aerobic activity, including step, high/low, hip-hop, sports training, and power walking. Each class includes a warm-up, aerobic segment, and cool down.

43 Tai Chi (1)

Introduction to the art of Tai Chi Ch'uan. Focus on the solo form, which is a series of slow, circular, continuous movements. Tai Chi principles, philosophy, and history. Body alignment, kinetics, and warm-up exercises.

44 Aikido (1)

Aikido helps participants deal with stressful and threatening situations and defend themselves if necessary in situations where force and violence is imminent.

45 Experimental Activities (1)

Topic and amount of laboratory fee (if charged) announced in *Schedule of Classes*. May be repeated for credit.

46 Taekwondo (1)

The fundamental techniques and training regimen of taekwondo, a Korean martial art. Beginning students become proficient in the techniques required for a promotion to yellow belt. More advanced students receive training appropriate to their rank.

47 Bowling (1)

Basic components and skills for this lifetime sport.

48 Horseback Riding (1)

Theory and practice for beginning, intermediate, and advanced level students. Course fee, \$350.

49 In-Line Skating (1)

Students learn to skate and stop, in control and with confidence.

50 Shiatsu (1)

Balanced and centered movements are drawn from the martial arts of Tai Chi Ch'uan Aikido, a method of self-development.

53 Squash (1)

Basic rules, skills, and the strategies involved in the game. Equipment fee, \$25.

56 Scuba Diving Certification Course (2)

This is an entry-level PADI (Professional Association of Diving Instructors) course, leading to international diver certification. The student is introduced to the techniques and theories of safe diving in pool and lecture sessions. Course fee, \$150.

57 Scuba Lab (1)

Open water dive certification lab. Course fee, \$150.

60 CPR/First Aid (1)

At the completion of the course the student will be able to address adult, child, and infant choking and perform rescue breathing and CPR techniques as taught by the American Red Cross. Course fee, \$13.

61 Lifeguard Training Certification Course (2)

Skills and knowledge needed to prevent and respond to aquatic emergencies. Course content and activities prepare lifeguard candidates to recognize and respond quickly and effectively to emergencies and prevent drowning and other incidents. Course fee, \$10.

62 Conditioning/Weight Training (2)

The fundamentals and theory behind various methods of weight training, cardiovascular fitness, and nutrition.

66 Sports Massage (2)

Principles of orthopaedic sports massage, the musculoskeletal conditions that can benefit from it, and performance of these massage techniques. Course fee, \$10.

67 Aerobics Instructor Training (2)

Fundamentals of instruction for a group exercise leader. Participants develop the skills needed to teach a safe, enjoyable, and effective group exercise class.

68 Sport Clinics and Workshops (1 to 3)

Special intensive study and skill development. There may be a laboratory fee, amount announced in *Schedule of Classes*.

FILM STUDIES

Committee on Film Studies

P. Rollberg (*Chair*), Y. Captain, H. Feigenbaum, R. Guenther, K. Harvey, A. Hildebeitel, N. Seavey, J.-F. Thibault

Minor in film studies—Students in Columbian College of Arts and Sciences may earn a minor in film studies by completing the four core courses below plus three additional film courses chosen from AmSt 192/AH 157, Fren 131, 132, Ger 181, Japn 162, Phil 62, Slav 185, 186, Span 131.

151 Film Theory (3)

A reading-intensive immersion in classical film aesthetics and a survey of the theoretical and critical canon of cinema literature. Laboratory fee, \$30. (Fall)

152 Genres of Film (3)

An exploration of the relationship between cinematic structure and narrative content in various types of film. Laboratory fee, \$30. (Spring)

153–54 History of World Cinema I–II (3–3)

A two-semester sequence covering 100 years of international cinematic history from an aesthetic and political point of view. Laboratory fee, \$30 per semester. (Academic year)

FINANCE

Professors T.M. Barnhill, W. Handorf, M.S. Klock (*Chair*), S. Phillips, I.G. Bajoux-Besnainou, G.M. Jabbour, R.K. Green

Associate Professors J.M. Sachlis, N.G. Cohen, P.S. Peyser, A.J. Wilson, P.R. Locke

Assistant Professors R. Savickas, K.L. Neuhauser, S. Agca, G. Jostova, A. Baptista

Professorial Lecturers S. Uyanik, J. Overdahl

Associate Professorial Lecturers R. Strand, T. McCormick

See the School of Business for programs of study leading to the degrees of Bachelor of Accountancy and Bachelor of Business Administration.

Departmental prerequisite: BAdm 115 is prerequisite to all courses in the Finance Department.

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| 122 | Intermediate Finance (3) | Wilson |
| | Theory and practice of acquiring and using funds. Simulations of business decisions by cases and/or models to assess the risk/return interaction of investment, financing, and dividend decisions. (Fall and spring) | |
| 123 | Investment and Portfolio Management (3) | Baptista, Klock, Savickas |
| | Theory and principles of security analysis and portfolio management, including analysis of the national economy, industry, company, and security markets. Risk–reward and computer-aided analysis. (Fall and spring) | |
| 124 | Advanced Financial Management (3) | Barnhill, Cohen, Neuhauser |
| | Analysis and readings covering applications of theory to financial management. Case studies for decision making involving working capital, capital budgeting, financing, dividend policy, and valuation. Prerequisite: Fina 122, 123. (Fall and spring) | |
| 132 | Real Estate Investment (3) | Staff |

Principles of real estate investment, including valuation, appraisal, financing, and development, in addition to a discussion of the mortgage market and its institutions. (Fall)

135 **Money and Capital Markets (3)** Agca, Wilson

The process of capital formation in a free enterprise economy, with special emphasis on factors affecting the level and structure of interest rates. Money market, capital market, and derivative contracts (futures and swaps) are evaluated from both investment and financing perspectives. (Fall and spring)

190 **Special Topics (3)** Staff

Experimental offering; new course topics and teaching methods.

199 **Independent Study (arr.)**

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. (Fall and spring)

FINE ARTS AND ART HISTORY

Professors L.F. Robinson, J.F. Wright, Jr., T. Ozdogan, J.C. Anderson (*Chair*), B. von Barghahn, D. Bjelajac

Associate Professors J.L. Stephanic, K.J. Hartswick, P. Jacks, T. Brown

Assistant Professors E. Speck, D. Kessmann, A.B. Dumbadze, S.A. Sodaro-Spomer

Associate Professorial Lecturer L.D. Miller

Assistant Professorial Lecturers C. Wilson, S. Francoeur, S. Hutchison

Bachelor of Arts with a major in art history—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Required courses in related areas—Fren 4, Ger 4, Ital 4, or Span 4.

3. Required courses in the major—30 credit hours consisting of 6 credits each in ancient–medieval, Renaissance–Baroque, and modern European–American art history; 6 credits of art history seminars; and an additional 6 credits of 100-level courses in art history or, with approval of the advisor, in related departments.

Bachelor of Arts with a major in fine arts—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. A total of 51 hours of art courses is required of fine arts majors except for students with a concentration in photography, ceramics, and visual communication, for whom 54 hours are required.
3. Required basic fine arts courses: FA 21–22 and 41–42.
4. Required courses in art history: AH 31–32; 6 additional credit hours in 100-level art history courses.
5. Required fine arts courses in the major:
 - a. 12 hours, exclusive of primary area of concentration, in four of the following nine areas—ceramics, advanced drawing, advanced design, interior design, printmaking, painting, photography, sculpture, and visual communication.
 - b. 15 hours to be taken in the primary area of concentration (except for photography, ceramics, and visual communication).
 - c. 21 hours for students concentrating in photography: FA 23, 24, 25, 123 or 124, 181, 183 or 198, 205.
 - d. 21 hours for students concentrating in ceramics: FA 51, 52, 123 or 124, 133, 151, 152, 168.

e. 21 hours for students concentrating in visual communication: FA 163, 164, and five courses chosen in consultation with the advisor.

f. Students concentrating in interior design must consult with the area advisor for selection of courses.

6. Nine additional hours of electives may be taken in the Department of Fine Arts and Art History, except for students concentrating in photography, ceramics, and visual communication, who may take 6 hours of electives in the department.

7. Transfer students must take a minimum of 12 credit hours of 100-level fine arts courses at this University, of which 9 hours must be in their area of specialization.

Bachelor of Fine Arts with a major in interior design—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. A total of 120 credit hours, with 75 hours in the department and 45 hours of non-art courses.
3. Required foundation fine arts courses: FA 21–22, 42, 193.
4. Required art history courses: AH 31–32, 145, 161.
5. Required fine arts courses in interior design:
 - a. FA 108, 109, 110, 113, 114, 117, 118, 119, 122, 130, 139.
 - b. 9 hours selected from FA 111, 112, 115, 116, 120, 121, 129.
6. 9 hours selected from course work in ceramics, advanced drawing, advanced design, printmaking, painting, photography, sculpture, visual communication (each course must be in a different area).

Bachelor of Arts with a combined major in art history and fine arts—The following requirements must be fulfilled in consultation with the departmental advisor:

1. The general requirements stated under Columbian College of Arts and Sciences.

2. A total of 30 hours in art history and 30 hours in fine arts.

- a. Art history: AH 31–32 and one course in each of the following areas—ancient–medieval, Renaissance–Baroque, and modern European–American; one seminar; four additional 100-level art history electives.

- b. Fine arts: FA 21–22, 41–42. The remaining 18 hours may be in one area of concentration or a combination of areas.

Five-Year Bachelor of Arts with a major in fine arts/Master of Arts in the field of art therapy—Students interested in this dual degree program should consult the director of the Art Therapy Program early in the junior year.

Special Honors—For graduation with Special Honors, students must have attained, by the end of the junior year, a grade-point average of at least 3.5 in the major and 3.0 overall. No later than the beginning of the senior year, students should consult their advisor regarding eligibility and selection of an area of study and a director of the research or creative arts project.

Minor in art history—Required: AH 31, 32 and 12 additional credit hours in 100-level art history courses for a total of 18 hours.

Minor in fine arts—Required: 18 credit hours of general course work in fine arts or in a specific area selected from design, drawing, ceramics, interior design, photography, painting, printmaking, sculpture, or visual communication. Students in the general program should consult the undergraduate fine arts advisor. Those selecting a specific area should consult with an advisor in the area of concentration.

Combined minor in art history and fine arts—Required: 9–12 hours of course work in art history and 9–12 hours in fine arts, for a total of 21 hours. A program of study is developed in consultation with the undergraduate advisors in art history and fine arts.

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

ART HISTORY

31–32 Survey of Western Art I (3–3) Staff

An introduction to the history of art through the study of major monuments, movements, and concepts. AH 31: from the prehistoric period, through the Ancient Mediterranean cultures, including Greece and Rome, to the end of the Middle Ages. AH 32: from the early Renaissance through the Baroque and modern eras.

71 Introduction to the Arts in America (3) Bjelajac

A survey of American art from the period of colonial exploration and settlement to the postmodern present. Political and social meanings of painting, sculpture, architecture, prints, and photographs. The relationship of art to religion and nationalism; issues of class, race, and gender.

101 Ancient Art of the Bronze Age and Greece (3) Hartswick

A survey of Greek art from the Minoans and Mycenaeans (c. 2000 B.C.) to the age of Alexander (c. 300 B.C.). Relationships among the arts of the different groups in the Aegean area and their impact on Western culture. The Thera volcanic eruption, the “Dorian Invasion,” the portrayal of women, “heroic nudity,” and the assumption of a stylistic chronology.

102 Ancient Art of the Roman Empire (3) Hartswick

A survey of Roman art from the successors of Alexander the Great (c. 300 B.C.) to the fall of the Roman Empire in the West (c. 300 A.D.). The impact of the Greek world on Roman art and culture; innovations and achievements of the Romans in architecture, portraiture, and historical narrative. Focus on the city of Rome and other areas of the Roman world such as North Africa and Asia.

- 103 **Art and Archaeology of Egypt and the Near East (3)** Hartswick and Staff

The great artistic tradition of the Nile Valley and the contemporary civilizations (c. 3000 B.C. to after 1000 B.C.) between the rivers Tigris and Euphrates (present day Iraq). The Pyramid Age, the temples at Karnak and Luxor, the tombs of the Valley of the Kings, and the artistic traditions of the Sumerians, Akkadians, Babylonians, Assyrians, and Persians.

- 104 **Art and Archaeology of the Aegean Bronze Age (3)** Hartswick and Staff

Excavational and multidisciplinary aspects of classical archaeology. Minoan and Mycenaean civilizations (1700–1200 B.C.). Interrelationships between Greek and Persian cultures of the sixth and fifth centuries B.C.

- 106 **Art and Archaeology of Israel and Neighboring Lands (3)** Cline

Same as Anth 188.

- 109 **Seminar in Ancient Art and Architecture (3)** Hartswick

For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

- 111 **Early Christian and Byzantine Art and Architecture (3)** Anderson

Art of the Mediterranean world following the collapse of Roman administration. Growth of the basilica and its decoration; the significance of small objects in

medieval study. The rise and fall of the East Roman (Byzantine) Empire from Justinian to 1453.

112 **Romanesque and Gothic Art and Architecture (3)** Anderson

The origin of Western art in the Hiberno-Saxon and Carolingian worlds, their relationship to the Ancient heritage and to the contemporary Byzantine art.

Romanesque and Gothic architecture and its sculptural decoration as art historical and social phenomena.

119 **Seminar in Medieval Art and Architecture (3)** Anderson

For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

120 **Italian Art and Architecture of the 13th through 15th Centuries (3)** Jacks

Origins, development, and theoretical foundations of Renaissance painting, sculpture, and architecture (Giotto, Duccio, Masaccio, Donatello, Ghiberti, Brunelleschi, Mantegna, Bellini, Botticelli).

121 **Italian Art and Architecture of the 16th Century (3)** Jacks

The development of the universal genius within the circle of Florence and Rome (Leonardo, Raphael, Michelangelo) and their counterparts in Venice (Giorgione, Titian, Tintoretto, Sansovino, Palladio).

122 **Early Northern Renaissance Art and Architecture (3)** von Barghahn

Royal and ducal patronage and the Flemish and French masters of the 15th century, including van Eyck, Campin, van der Weyden, Fouquet, van der Goes, Memling, and Gerard David. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

- 123 **Northern Renaissance Art and Architecture (3)** von Barghahn
- Francis I and Fontainebleau Palace, Henry VIII and Hampton Court, Johann Friedrich of Saxony, and the Holy Roman Emperors Maximilian I and Charles V. François Clouet, Hans Holbein, Lucas Cranach, Albrecht Dürer, Pieter Brueghel, Bernard van Orley, and others.
- 129 **Seminar in Renaissance Art and Architecture (3)** Jacks, von Barghahn
- For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.
- 131 **Italian Art and Architecture of the 17th Century (3)** Jacks
- The Counter-Reformation and creation of the Baroque in painting, sculpture, and architecture in Rome (Carracci, Caravaggio, Bernini, Borromini, Pietro da Cortona), Turin (Guarini, Juvarra), and Venice (Longhena).
- 132 **Northern European Art and Architecture of the 17th Century (3)** von Barghahn
- Hapsburg Flanders and Brussels under the Spanish archdukes and their patronage of Rubens and his circle. The role of Dutch merchants commissioning diverse secular themes in Utrecht, Haarlem, Delft, Leyden, and Amsterdam from “Golden Age” artists such as Rembrandt, Vermeer, and Hals. Specific topic announced in the Schedule of Classes. May be repeated for credit if content differs.
- 134 **Spanish and Portuguese Art through the 16th Century (3)** von Barghahn
- The Kingdoms of the Iberian Peninsula from the Reconquest of Granada to the Renaissance Age of Exploration. Specific topic to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.
- 135 **17th/18th Century Spanish and Portuguese Art (3)** von Barghahn

Secular and sacred art of the Baroque Golden Century or the Rococo Enlightenment.

Specific topic to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

- 139
- Seminar in Baroque Art and Architecture (3)**
- Jacks, von Barghahn

For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

- 140
- European Art of the 18th Century (3)**
- Bjelajac

Painting, sculpture, and architecture in France, Great Britain, and Italy. Emphasis on Watteau, Chardin, David, Hogarth, Gainsborough, Reynolds, Canaletto, and Tiepolo.

- 141
- European Art of the Early 19th Century (3)**
- Robinson

Neoclassicism and Romanticism in the context of Western European political, social, and cultural developments. Emphasis on France, England, and Germany and the representative styles of David, Ingres, Delacroix, Turner, Constable, and Friedrich.

- 142
- European Art of the Late 19th Century (3)**
- Robinson

The revolution in style of Realism, Impressionism, and Post-Impressionism in the context of Western European political, social, and cultural developments. Emphasis on representative styles of Courbet, Manet, Monet, Morisot, Repin, Seurat, Cezanne, Van Gogh, and Gauguin.

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| 143 | European Art of the 20th Century (3) | Staff |
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20th-century European painting, sculpture, and architecture, from their origins in the late 19th century through Surrealism. Emphasis on theory. The work of artists such as Matisse, Picasso, Kandinsky, Duchamp, and Mondrian. Prerequisite: AH 32 or 142.

- 145 **History of Decorative Arts: European Heritage (3)** Staff
Changing styles of European furniture, textiles, ceramics, and glass in the context of general trends in art history and changing patterns in economic, technological, social, and cultural history. From antiquity to the modern age.
- 146 **Modern Architecture in Europe and America (3)** Jacks
Major developments in architecture and urbanism from the Industrial Revolution to the end of the 20th century.
- 149 **Seminar in Modern European Art and Architecture (3)** Bjelajac, Robinson
For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.
- 151 **American Art in the Age of Revolution (3)** Bjelajac
American art during the 18th-century “consumer revolution,” the American War for Independence, and the early republic. Emphasis on the socioeconomic and political purposes of art, with focus on Enlightenment symbolism and the visualization of national identity.
- 152 **American Art in the Era of National Expansion (3)** Bjelajac
American art from the opening of the Erie Canal in 1825 to the Spanish-American War in 1898. Emphasis on the role of art in the expansion of the United States, exploring issues of race, class, and gender; art and religion.
- 153 **American Art of the 20th Century (3)** Staff
20th-century American painting and sculpture from the turn of the century to the beginnings of postmodernism, with focus on the avant garde. Artists of the Stieglitz

circle and later modernist movements such as Abstract Expressionism, Pop, Op, Minimal, and Conceptual art. Theory and criticism. Prerequisite: AH 142 or 143.

154–55 **American Architecture (3–3)** Longstreth

Same as AmSt 175–76.

156 **Folk Arts in America (3)** Vlach

Same as AmSt 145.

157 **The American Cinema (3)** Staff

Same as AmSt 192.

159 **Seminar in American Art and Architecture (3)** Bjelajac

For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

160 **Latin American Art and Architecture (3)** von Barghahn and Staff

Specific topic to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

161 **History of Decorative Arts: American Heritage (3)** Staff

The decorative arts in America from the 17th century to the modern period.

Consideration of changing visual characteristics in relation to the changing American experience.

162 **History of Photography (3)** Staff

The historical, social, aesthetic and technological developments of the photographic medium, including its relationship to modern art and modes of visual representation and the properties that inform our understanding of photographic meaning.

165 **Modernist and Postmodernist Art and Theory (3)** Staff

Artists, art forms, and critical concepts from the 1940s to the present, focusing on Clement Greenberg's modernist theory and the development of postmodernist art and thought. Prerequisite: AH 143 or 153.

190 **East Asian Art (3)** Staff

Survey of the arts of China, Japan, and Korea.

191 **South Asian Art (3)** Staff

Survey of the arts of India, Pakistan, Sri Lanka, Nepal, and Tibet, from prehistoric times to circa 18th century.

192 **The Art of Southeast Asia (3)** Staff

The arts of Southeast Asia—Vietnam, Laos, Cambodia, Myanmar (former Burma), Thailand, and Indonesia, especially Java and Bali. The fusion of Indian and Chinese concepts with indigenous cultural traits.

198 **Independent Study (3)** Staff

Directed research and study in a specific area of art history to be approved by a faculty member. May be repeated for credit.

199 **Internship (3)** Staff

Open to candidates for the B.A. in art history only and with the approval of advisor in art history. May not be repeated for credit toward the degree. May be taken P/NP only.

FINE ARTS

Note: Fine arts courses at the 100 level may be repeated for credit with approval of the department. Schedule of fees for FA 123–24: Ceramics—\$105; 2-D Design—\$24; 3-D Design—\$27; Drawing—\$75; Sculpture—\$85; Typography—\$75; Oil and Acrylic Painting—none;

Watercolor—\$45; Photography—\$100; Visual Communication—\$100; Interior Design—\$100; Serigraphy—\$75.

21–22 **Design I: Basic** (3–3)

Stephanic and Staff

Required of all Fine Arts majors. Fundamental studies of principles and elements of design. FA 21: study of two-dimensional design. FA 22: three-dimensional studies. FA 21: Laboratory fee, \$24. FA 22: Laboratory fee, \$27. (FA 21 and 22—fall and spring)

23 **Introduction to Photography** (3)

Kessmann and Staff

Introduction to the principles of exposure and development of films and papers. Emphasis on creative expression. Laboratory fee, \$100. (Fall and spring)

24 **Introduction to Color Photography** (3)

Kessmann and Staff

Introduction to the materials and processes of color photography. Emphasis on the proper exposure and color balancing of slide film for the purpose of creative expression. Prerequisite: FA 23 or permission of instructor. Laboratory fee, \$100. (Fall and spring)

25 **Digital Photography** (3)

Kessmann and Staff

Introduction to the digital-editing program Adobe Photoshop. Emphasis on the features most useful to photographic artists for the purpose of creative expression. Prerequisite: FA 24 or permission of instructor. Laboratory fee, \$100. (Fall and spring)

41–42 **Drawing I** (3–3)

Wright and Staff

Elementary investigation of concepts of drawing, both traditional and contemporary; training in perception, analysis of form in light and space; instruction in the use of graphic materials and media; exercises in connoisseurship. Material and model fee, \$75 per semester. (FA 41 and 42—fall and spring)

- 51 **Introduction to Handbuilt Ceramics (3)** Ozdogan and Staff
- Working with clay as an art form. Exploration of pinch, coil, slab, hump and press mold, paddling, and hollowing techniques. Sketch studies, reduction and oxidation kiln firings, clay and glaze making. Laboratory fee, \$105, includes unlimited materials and use of tools. (Fall and spring)
- 52 **Introduction to Wheelthrown Ceramics (3)** Ozdogan and Staff
- Development of cylindrical and open forms. Trimming, clay and glaze making, reduction and oxidation kiln firings. Sketch studies. Laboratory fee, \$105, including unlimited materials and use of tools. (Fall and spring)
- 61–62 **Water Color (3–3)** Brown and Staff
- Painting in transparent and opaque water color and in acrylic. Experimentation, figurative, and landscape. Laboratory fee, \$45 per semester. (Academic year)
- 65–66 **Painting I (3–3)** Brown and Staff
- Focus on fundamental technical and perceptual skills. Working with oils, assignments are based directly from life. Material and model fee, \$45 per semester. (Academic year)
- 81–82 **Sculpture I (3–3)** Staff
- Beginning study of design and fabrication of sculpture. Basic sculptural techniques for media, including clay, plaster, stone, and wood. Laboratory fee, \$85 per semester. (Academic year)
- 108 **Architectural Drawing (3)** Staff
- Basic graphic communication skills appropriate to the development of interior design projects. Two- and three-dimensional drawing skills developed through use of sketching,

orthographic drawing, paraline drawing, and perspective techniques. Prerequisite: FA 42.

Laboratory fee, \$100.

109 Interior Design Studio I (3) Staff

Application of basic design concepts and introduction to the design process.

Development of floor plans and elevations, furniture layouts, perspective drawings, and presentation boards for residential and commercial design. Prerequisite: FA 108.

Laboratory fee, \$100.

110 Textiles and Finish Materials (3) Staff

Textiles and finish materials for commercial and residential interiors. Physical properties, application, testing, regulations, and specification. Laboratory fee, \$100.

111 Furniture Design (3) Staff

Principles and components of furniture design, both functional and aesthetic. Emphasis on construction, design, detailing of cabinetry and millwork. Development of design and technical skills. Two- and three-dimensional drawing models. Prerequisite: FA 109.

Laboratory fee, \$100.

112 Computer-Aided Drafting for Interiors (3) Staff

Introduction to basic CAD commands, two- and three-dimensional drawings, enhancement, and plotting. Using CAD as a tool to extend the design process.

Prerequisite: FA 193. Laboratory fee, \$100.

113 Interior Design Studio II (3) Staff

Residential interior design: single-family and multi-unit. Application of residential building technology, code requirements, and barrier-free design. Custom millwork and cabinetry design. Prerequisite: FA 109. Laboratory fee, \$100.

114 **Interior Design Studio III (3)** Staff

Commercial interior design: office, restaurant, and retail. Application of building codes and ADA requirements. Layout and specification of contract and systems furniture.

Commercial textiles and finish materials. Prerequisite: FA 113. Laboratory fee, \$100.

115 **Studio in Historic Interiors (3)** Staff

Exploration and interpretation of significant periods of interior design through the study of historic furniture, decorative art, and architecture. Focus on application of historic styles for restoration or adaptive use. Prerequisite: AH 169 and 170. Laboratory fee, \$100.

116 **Textile Design and Construction (3)** Staff

Design and construction of various types of textiles, both woven and non-woven.

Emphasis on the creative process and design development. Prerequisite: FA 21.

Laboratory fee, \$100.

117 **Methods and Materials of Building Construction (3)** Staff

Study of building systems as they relate to design and function of interior spaces: mechanical, electrical, HVAC systems. Environmental concerns: energy, daylighting, and acoustics. Prerequisite: FA 108 and 110. Laboratory fee, \$100.

118 **Interior Design Studio IV (3)** Staff

Application of theories of human behavior and design in large-scale institutional settings, including public and private facilities serving medical, educational, and extended-care needs. Prerequisite: FA 114. Laboratory fee. \$100.

119 **Lighting Design (3)** Staff

Study of basic terminology, concepts, and principles of lighting design. Study of light and energy, incandescent and gaseous discharge lamps, luminaries, task requirements, measurement and calculation, human factors, and design applications for lighting.

Prerequisite: FA 108. Laboratory fee, \$100.

120 Design of Printed Textiles (3) Staff

Surface pattern design of textiles. Source materials, design techniques, and development of technical skills. Prerequisite: FA 21. Laboratory fee, \$100.

121 Environment and Behavior (3) Staff

Study of interior design as it relates to the built environment and its effect on human behavior. Interior space as stage for social interaction. Evaluation of interior spaces using standard research methodology. Laboratory fee, \$100.

122 Contemporary Issues in Interior Design Theory and Practice (3) Staff

The roles and responsibilities of interior designers in the context of current social and technical forces. Topics include business procedure and practice, legal and ethical issues, and designer–client–contractor relations. Prerequisite: FA 108 and 110.

123–24 Individual Problems (1 to 6 each) Staff

Emphasis on problems and materials of specific interest to the student in any area of fine arts. Laboratory fee depending on area chosen. Prerequisite: permission of instructor.

125–26 Painting II (3–3) Brown and Staff

Work in oil from still lifes, landscapes, and figures to pursue challenges including color, gesture, light and paint quality. Material and model fee, \$45 per semester. (Academic year)

127–28 Painting III (3–3) Brown

Studies in the interpretation of the figure and still life. Emphasis on color, space, planes, modulations. Alla prima and mixed techniques. Material and model fee, \$45 per semester. (Academic year)

129 **Presentation Techniques (3)** Staff

Advanced three-dimensional drawing using rapid visualization techniques, sketching, and constructed drawings. Development of multimedia rendering techniques. Prerequisite: FA 109. Laboratory fee, \$100.

130 **Internship in Interior Design (3)** Staff

Application of knowledge and skills in project-based setting for a local firm. Appropriate placement and sponsor participation required prior to registration. Prerequisite: FA 114 and senior standing.

131 **Intermediate Ceramics:** Ozdogan and Staff

Wheelthrown Functional Forms (3)

Aesthetic and technical development of wheelthrown functional ceramic forms.

Exploration of attachments: lids, spouts, handles, and footing devices. Sketches and technical drawings, clay and glaze-making tests, varied temperature firings in reduction and oxidation atmospheres. Laboratory fee, \$105. (Fall and spring)

132 **Intermediate Ceramics:** Ozdogan and Staff

Wheelthrown Nonfunctional Forms (3)

Aesthetic and technical development of wheelthrown ceramic sculptural forms. Emphasis on section throwing, closed forms, and construction. Varied temperature firings in oxidation and reduction atmospheres. Clay and glaze making. Laboratory fee, \$105. (Fall and spring)

133 **Ceramic Decoration (3)** Ozdogan

Aesthetic and technical development of surface decoration, with experimental projects in sgraffito, mishima, engobe, majolica, underglaze, overglaze, and relief techniques.

Laboratory fee, \$105.

134 **Nonsilver Printing Processes in Photography (3)** Kessmann and Staff

Introduction to nonsilver and archaic photographic processes. At least three processes will be explored. Emphasis on creative expression. Prerequisite: FA 23 and 24 or permission of instructor. Laboratory fee, \$100. (Spring)

135 **Advanced Water Color (3)** Brown

Development of techniques of water color; concentration on special projects. Laboratory fee, \$45. (Academic year)

139 **Problems in Color (3)** Staff

Intensive exploration of the objective rationale and subjective experience of color through the execution of problems in color contrast and color scales. Prerequisite: FA 21. Laboratory fee, \$18. (Spring)

141 **Interior Design (3)** Staff

Survey of basic interior design materials and techniques. Topics include floor plans and design, interior renderings, hard and soft materials, furniture styles. Laboratory fee, \$21. (Fall)

142 **Interior Design Problems (3)** Staff

A theoretical and practical in-depth exploration of a specific area of interior design. Topic to be announced in the *Schedule of Classes*. Prerequisite: FA 141 or equivalent. Laboratory fee, \$35. (Spring)

143–44 **Printmaking: Screenprinting** (3–3) Staff

Fine arts printmaking using serigraphic techniques. Utilization of all basic techniques; emphasis on aesthetic properties of prints. Laboratory fee, \$75 per semester. (Academic year)

146 **Ceramic Restoration, Conservation, and Installation** (3) Ozdogan

Methods and techniques of restoration, conservation, and installation of pottery, sculptural ceramics, and architectural ceramics, with modular and mixed media attachments. Emphasis on repair according to museum and collector specifications, using permanent and temporary finishings. Laboratory fee, \$105. (Summer)

151 **Ceramic History and Technology** (3) Staff

Emphasis on clay and glaze formulation and firing techniques, with related historical background. Laboratory fee, \$105. (Fall)

152 **Ceramic Sculpture** (3) Ozdogan

Developing an understanding of the sculptural ceramic form that integrates both quality and creativity. Techniques in hollow and solid construction. Varied temperature firings in reduction and oxidation atmospheres. Laboratory fee, \$105. (Fall)

159–60 **Drawing II** (3–3) Wright and Staff

Study and application of master drawing techniques. Investigation of perspective and anatomy. Emphasis upon conceptual development of personal style. Material and model fee, \$75 per semester. (Academic year)

166 **Advanced Drawing Techniques** (3) Staff

Specific area announced in the *Schedule of Classes*. May be repeated for credit if the area covered is different. Laboratory fee: FA 166.10, \$75; FA 166.11, \$90.

- 168 **Intermediate Ceramic Design in Handbuilding (3)** Ozdogan
- Further concentration in handbuilding techniques of pinch, coil, slab, hump and press mold, paddling, and hollowing. Sketch studies, clay and glaze tests. Orientation to studio operations and maintenance. Laboratory fee, \$105. (Fall and spring)
- 179–80 **Sculpture II (3–3)** Staff
- Expansion of Sculpture I, utilizing advanced wood milling equipment and metal welding techniques. Prerequisite: FA 81–82. Laboratory fee, \$85 per semester.
- 181 **Criticizing Photographs (3)** Kessmann and Staff
- Introduction to photographic theory and the process of art criticism with an emphasis on photographic images. Laboratory fee, \$100. (Fall)
- 182 **Introduction to Photographic Lighting (3)** Kessmann and Staff
- Introduction to various lighting techniques. Available light manipulation, studio lighting, and copy lighting will be explored. Emphasis on creative expression. Prerequisite: FA 23 and 24 or permission of instructor. Laboratory fee, \$100. (Fall and spring)
- 183 **Experimental Photography (3)** Kessmann and Staff
- Structured exploration of various photographic processes and techniques. Emphasis on creative expression. Content of course will vary; contact department for current offering. Prerequisite: FA 23 and 24 or permission of instructor. Laboratory fee, \$100. (Fall and spring)
- 186 **Portrait Painting and Drawing (3)** Staff
- Model fee, \$45.
- 189–90 **Sculpture III (3–3)** Staff

Advanced study in concepts and materials through creation of three-dimensional forms concentrating on relevance of scale and media. Relationship of sculpture to the environment. Prerequisite: FA 179–80. Laboratory fee, \$85 per semester. (Academic year)

193 **Computer Design in the Fine Arts I (3)** Stephanic

Exploration of the use of computers as a visual arts medium. Topics include bit-mapped painting, object-oriented drawing, Image scanning/manipulation, multimedia and Internet site design. Emphasis on creative expression. Laboratory fee, \$100.

194 **Computer Design in the Fine Arts II (3)** Stephanic

Continuation of FA 193, with an emphasis on individual approach. Prerequisite: FA 193 or permission of instructor. Laboratory fee, \$100.

198 **Topics in Photography (3)** Kessmann and Staff

Structured exploration of various topics related to photographic practice. May be repeated for credit provided the topic differs. Prerequisite: FA 23 or permission of instructor. Laboratory fee, \$100.

FORENSIC SCIENCES

The Department of Forensic Sciences offers graduate degree programs through Columbian College of Arts and Sciences. The following courses are available to undergraduates.

103–4 **Introduction to Forensic Sciences (3–3)** Rowe

Topics in the application of science to the criminal justice system, including personal identification, analysis of drugs, forms of trace evidence, identification of biological fluids, forensic pathology, and forensic toxicology. Prerequisite: two semesters of a laboratory science other than astronomy and permission of instructor.

190 **Topics in Forensic Sciences (3)**

Staff

Prerequisite: Any combination of two courses from BiSc 3–4 or Chem 3–4 or equivalent and junior standing.

FRENCH

See **Romance, German, and Slavic Languages and Literatures.**

GEOGRAPHY

Professor G.C. Stephens

Associate Professors M.D. Price (*Chair*), E. Chacko

Assistant Professors L.M. Benton-Short, D. Rain, R. Engstrom

Adjunct Instructor J.P. Dymond

Professorial Lecturer G.T. Foggin

Assistant Professorial Lecturers L. Marcus, M. Zeigler, B. Koulov, I. Cheung

Lecturer G. Hofmann

Bachelor of Arts with a major in geography—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Required courses in the major—36 credit hours, including Geog 1, 2, 4, 195. A minimum of 6 credit hours must be chosen from each of the following groups: Group A (Physical/Environmental/Resources)—Geog 108, 110, 128, 132, 134, 136, 137, 143; Group B (Human)—Geog 124, 125, 127, 133, 140, 141, 143, 144, 145, 146, 147, 148, 187; Group C (Techniques)—Geog 104, 105, 106, 107, 121, 196. At least 3 credits must be chosen from Group D (Regional)—Geog 120, 151, 154, 161, 164, 165.

Minor in geography—Required: 21 credit hours, including Geog 1, 2, 4, and one course from each of the groups listed under requirements for the major.

Minor in geographic information systems—Required: 21 credit hours, including Geog 1, 2; four courses from Group C and one course from either Group A or B, above.

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

1 **Introduction to Human Geography (3)**

Benton-Short, Dymond

A systematic survey of human geography; cultural perspectives on the use of space, including urbanization, geopolitics, and land use. (Fall and spring)

2 **Introduction to Physical Geography (3)**

Foggin, Engstrom

A systematic survey of environmental geography; perspectives on environments and human ecology, including ecosystems and their use, human population dynamics, and resource geography. (Fall and spring)

3 **Society and Environment (3)**

Rain

An introduction to the dynamic relationship between society and the physical environment, with focus on population, natural resources, environmental degradation, pollution, and conservation.

4 **Introduction to Physical Geography Lab (1)**

Staff

Laboratory complement to Geog 2. Prerequisite or concurrent registration in Geog 2.

Laboratory fee, \$55.

104 **Introduction to Cartography and GIS (3)**

Staff

Fundamentals of cartography; geographic data structure and information systems.

Laboratory fee, \$55.

105 **Techniques of Spatial Analysis (3)** Staff

Nature of geographical inquiry and analytical methods used in the study of spatial processes and patterns.

106 **Intermediate Geographic Information Systems (3)** Rain, Engstrom

Principles of geographic information systems and their use in spatial analysis and information management. Laboratory fee, \$55. Prerequisite: Geog 104 and 105.

107 **Introduction to Remote Sensing (3)** Engstrom

Remote-sensing techniques using digital satellite imagery and aerial photography.

Application to rural and urban settings, archaeology, and environmental monitoring.

Laboratory fee, \$55. Prerequisite: Geog 105 or permission of instructor.

108 **Weather and Climate (3)** Staff

The elements and controls of weather and climate. Topics include energy and water balances, atmospheric general circulation, and severe weather events. Prerequisite: Geog 2.

110 **Climate and Human Ecology (3)** Staff

Interrelationships between human activities and the climatic environment. Emphasis on global climatic change. Prerequisite: Geog 2.

120 **World Regional Geography (3)** Price, Dymond

World cultural regions and the impacts of globalization; the environmental human conditions that undergird current problems and future prospects.

121 **Advanced Geographic Information Systems (GIS) (3)** Cheung

Integration of GIS, remote sensing, and spatial modeling. Laboratory fee, \$55.

Prerequisite: Geog 106.

124 **Urban Transportation (3)** Marcus

The relationship between freight and passenger transportation systems and urban land use patterns and structure. Prerequisite: Geog 1.

125 **Transportation and Communication (3)** Marcus

The structure and evolution of transportation and communication networks and their impact on regional development. Prerequisite: Geog 1.

127 **Population Geography (3)** Chacko

Patterns of world population; factors contributing to population pressures, growth, and migrations.

128 **Geomorphology (4)** Stephens

Same as EES 128.

132 **Environmental Quality and Management (3)** Foggin

The evolution of environmental management philosophies and tools. The global distribution, utilization, and degradation of natural resources. Prerequisite: Geog 2.

133 **People, Land, and Food (3)** Foggin

Domestication and dispersal of plants and animals; development of agricultural systems; spatial disparities in world food production, demand, and distribution.

134 **Energy Resources (3)** Staff

Analysis of regional patterns and trends in consumption and production of energy resources. Examination of international energy linkages and energy policies of selected nations. Prerequisite: Geog 2.

- 136 **Water Resources** (3) Foggin, Engstrom
Analysis of the global spatial patterns, development, use, and quality of water resources.
- 137 **Environmental Hazards** (3) Stephens
Examination of environmental hazards with emphasis on the use of geographic information systems. Prerequisite: Geog 2.
- 140 **Urban Geography** (3) Benton-Short
Analysis of the internal spatial structure of cities; emphasis on patterns and dynamics of location within cities in the developed world. Prerequisite: Geog 1.
- 141 **Cities in the Developing World** (3) Rain, Dymond
Urbanization processes, problems, and management in the developing world. Focus on urban location, politics, housing, services, employment, and environmental issues.
Prerequisite: Geog 1.
- 143 **Urban Environmental Geography** (3) Benton-Short
Relationship between urban spaces and the environment. Prerequisite: Geog 1.
- 144 **Explorations in Historical Geography** (3) Staff
Same as AmSt 144.
- 145 **Cultural Geography** (3) Dymond
Analysis of the relationships between culture and environment; emphasis on spatial and ecological considerations. Prerequisite: Geog 1.
- 146 **Political Geography** (3) Price, Dymond
Interrelationships among the human and physical environment and political systems; the organization of political territories.
- 147 **Military Geography** (3) Staff

An examination of environmental and locational factors and their impact on military planning and operations.

- 148 **Economic Geography** (3) Staff

Locational influences on and spatial variation of the development of manufacturing, services, trade, and finance. Prerequisite: Geog 1.

- 151 **Geography of North America** (3) Foggin

An examination of the environmental, social, and economic factors that have led to development of the several regions of the U.S. and Canada.

- 154 **Geography of the Middle East and North Africa** (3) Staff

Cultural and physical regional patterns of the Middle East and North Africa. Prerequisite: Geog 1 or 2.

- 161 **Geography of Latin America** (3) Price, Dymond

Examination of spatial characteristics of physical and cultural phenomena in Latin America.

- 164 **Geography of Africa** (3) Rain

Cultural and physical patterns of Africa. Prerequisite: Geog 1 or 2.

- 165 **Geography of South Asia** (3) Chacko

An examination of the complex interplay of environmental, economic, sociocultural, and political factors in South Asia and their effects at the local and regional levels.

- 187 **Building Cities** (3) Benton-Short

Urban development dynamics and experience in the United States and abroad, including the pressures of social change. Background and insights needed by entrepreneurs and

enlightened citizens to comprehend and play effective roles in contemporary city-building. Same as AmSt 187.

189–90 Readings in Geography (arr.)

Staff

Prerequisite: 12 credit hours of geography and permission of instructor.

195 Proseminar in Geographic Thought (3)

Foggin

For students completing the major in geography. Development of geographic thought, theories, and methodologies; geographic curricula. Prerequisite: permission of the advisor.

196 Field Methods in Geography (3)

Engstrom

Field research in human and physical geography. Students participate in several field exercises and develop their skills of observation, field mapping, repeat photography, and surveys. Laboratory fee, \$55. Prerequisite: Geog 1 and 2 and permission of instructor.

198 Special Topics (3)

Staff

Consideration of geographic aspects of topical and future problems of society. May be repeated for credit provided that the topic differs. Prerequisite: Geog 1 or 2.

199 Internship (3)

Staff

Fieldwork, internship, or other controlled assignment with an agency or organization engaged in work in applied geography. Prerequisite: 12 credit hours of geography courses and permission of instructor.

GEOSCIENCE

For information on the majors in geoscience and environmental science, contact the Biological Sciences Department.

GERMAN

See **Romance, German, and Slavic Languages and Literatures.**

GREEK

See **Classical and Semitic Languages and Literatures.**

HEALTH SCIENCES

The following courses, offered by the Health Sciences Programs in the School of Medicine and Health Sciences, are available to undergraduates across the University and pertain to the secondary field in health sciences. Prerequisites may be established for the courses. For information on bachelor's degree programs in health sciences, please contact the Office of Admissions, Health Sciences Programs, School of Medicine and Health Sciences.

101 Psychosocial Aspects of Health and Illness (3)

Comprehensive introduction to the psychological and social aspects of health and wellness. Emphasis on the development of communication skills and the establishment of caring relationships. Discussions of special situations such as working with dying patients and patients with self-destructive behaviors.

102 Pathophysiology (3)

Biomedical and scientific framework for the understanding of human disease mechanisms and biologic processes. Lecture presentations cover infectious, immunologic, cardiovascular, genetic, respiratory, gastrointestinal, neoplastic, reproductive, renal, hematologic, neurologic, and musculoskeletal diseases.

103 Health Policy and the Health Care System (3)

Incorporates economic theory and policy analysis methodology to analyze the impact of changes in the health care system on the practice of health sciences professionals

and the quality and process of health care. Development of critical thinking skills through review of current medical literature.

104 Management of Health Science Services (3)

Application of management and organizational principles to the delivery of services provided by health sciences disciplines. Issues addressed include information systems, leadership, team building, fiscal management, human resources management, quality improvement, and management of conflict and change.

105 Ethics for Health Professionals (3)

Basic issues, approaches, and requirements of ethically acceptable decision making with patients, including patient confidentiality, conflicts of interest, allocation of scarce resources, occupational risks in health care, and professional responsibility for overall quality of care.

HEBREW

See **Classical and Semitic Languages and Literatures.**

HISTORY

Professors R. Thornton, P.F. Klarén, R.E. Kennedy, Jr., W.H. Becker, L.P. Ribuffo, E.

Berkowitz, R.H. Spector, J.O. Horton, L.L. Peck, M.E. Saperstein, R.J. Cottrol, D.K.

Kennedy, A.M. Black (*Research*), M.A. Atkin (*Chair*), T. Anbinder

Associate Professors R.B. Stott, H.L. Agnew, E.A. McCord, C.E. Harrison, D.R. Khoury, J.

Hershberg, D. Yang, A.L. Alexander, S. McHale, H.M. Harrison, E.H. Cline, N. Blyden

Assistant Professors N.G. Seavey (*Research*), A. Zimmerman, K.W. Larsen, M. Norton, G.A.

Brazinsky, D. Silverman

Adjunct Associate Professor K. Bowling

Director and Principal Investigator of the First Federal Congress Project C. Bickford

Bachelor of Arts with a major in history—The following requirements must be fulfilled:

1. Majors must meet the general requirements of Columbian College of Arts and Sciences, selecting specific courses in consultation with either a departmental or college advisor.
2. Majors must either take or waive three of the following five introductory courses: Hist 38, 39–40, and 71–72. Waiver may be accomplished by passing a departmental examination, which is held near the beginning of classes. Credit as well as waiver may be obtained by departmental examination or by scoring 4 or 5 on the Advanced Placement Examination, and waiver may be obtained by scoring 650 or above on the College Board Achievement Test. Neither waiver nor credit is awarded by CLEP subject examination.
3. Majors must complete Hist 198 and 199, plus seven courses chosen from groups (a), (b), and (c), below, with the following distribution: at least three courses from one of the groups, at least two courses from a second group, at least one course from the third group, with the seventh course chosen from any of the three groups.

(a) Europe—Hist 109, 110, 111, 112, 113, 115, 117, 121, 122, 123, 124, 125, 131, 132, 135, 136, 141, 142, 143, 144, 147, 148, 149, 150, 151, 152, 153, 154, 157, 158, 159, 161

(b) United States—Hist 103, 104, 126, 127, 129, 133, 134, 137, 138, 139, 140, 160, 161, 166, 167, 168, 169, 171, 172, 173, 175, 176, 177, 178, 179, 182, 183, 184, 185, 186

(c) Russia, Asia, Africa, and Latin America—Hist 107, 108, 114, 115, 116, 117, 118, 126, 127, 145, 146, 158, 161, 162, 163, 164, 165, 183, 187, 188, 189, 190, 193, 194, 196

Special topics courses numbered 101 and courses in the 700 Series may also satisfy one of the three field requirements. Majors should check with the major advisor on the applicability of such courses.

Special Honors—For Special Honors in history, a history major must (1) meet the general honors requirements listed under University Regulations; (2) apply for honors candidacy, complete Hist 199 before the end of the junior year, and receive an *A* or *A–*; and (3) in the ensuing semester, enlarge upon the research project undertaken in Hist 199 while enrolled in Hist 191. Only if the thesis completed in Hist 191 merits the grade of *A* or *A2* will Special Honors be recommended.

Minor in history—Undergraduate students who select a minor in history must ordinarily declare their intention to the departmental advisor no later than the beginning of their senior year. Such students may choose a nonspecialized history curriculum, or may concentrate in one area or in one field. In each case the program of courses will be planned in consultation with the history advisor. To meet the departmental requirements for a minor, the student must complete one course chosen from Hist 38, 39, 40, 71, or 72 and at least five additional approved 100-level history courses.

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

Waiver Examinations: Waiver examinations are given twice each year, near the beginning of classes in the fall and spring semesters.

Course Accessibility: All 100-level courses are open to students without history course prerequisites with the exception of Hist 136, 157, 160, 191, 192, 198, and 199.

38 **World History, 1500–Present (3)**

D. Kennedy and Staff

An introduction to world history over the past half millennium, stressing themes of exchange and integration, tracing the ways various peoples of the world became bound together in a common system.

- 39–40 **European Civilization in Its World Context (3–3)** Staff
- Introduction to the history of Europe and the West, emphasizing primary sources and their interpretation. Hist 39: from the beginning of written culture through 1715. Hist 40: From 1715 to the present.
- 42 **Women in Western Civilization (3)** Staff
- Same as WStu 1.
- 71–72 **Introduction to American History (3–3)** Staff
- Hist 71: political, social, economic, and cultural forces of the United States, from the earliest settlements to 1876. Hist 72: from 1876 to present.
- 101 **Special Topics (3)** Staff
- Historical perspectives on great issues of past and present. Topics announced in the *Schedule of Classes*.
- 107 **The Ancient Near East and Egypt to 322 B.C. (3)** Cline
- Survey of Egyptian, Mesopotamian, Anatolian, West Semitic, and Iranian civilizations from the Neolithic period to Alexander's conquest. Same as Clas 117.
- 108 **History of Ancient Israel (3)** Cline
- The history of ancient Israel from the Patriarchs through the Romans. Topics include historical, archeological, political, social, cultural, religious, diplomatic, military, economic, and intellectual events, movements, and relationships. Same as Clas 118.
- 109 **Early Aegean and Greek Civilizations to 338 B.C. (3)** Cline
- Neolithic background; Bronze Age—Minoan, Helladic, and Mycenaean civilizations; classical Greek civilization to the Macedonian conquest. Same as Clas 119.
- 110 **The Roman World to 337 A.D. (3)** Cline

Prehistoric Italy; rise and decline of the Roman Empire and Latin civilization; cultural, social, and political developments in the Greek world under Roman rule. Same as Clas 120.

111 **The Early Middle Ages (3)** Staff

The evolution of Roman, Islamic, Byzantine, and Germanic societies from the end of the Roman Empire through the rise of Latin Christendom by the year 1000; the nature of political power, role of religion, place of gender, cultural production, and changing social structures.

112 **The High Middle Ages (3)** Staff

The evolution of Europe, ca. 1000 to 1400, with emphasis on the organization of the medieval state; the role of law and religion, considering the impact of the crusades and religious dissent; economic growth; the rise of urbanism; aspects of daily life, artistic innovation, and new modes of thought.

113 **History of the Jews in Christian Europe to the 18th Century (3)** Saperstein

The position of Jews in relation to Church and State; organization and self-government of the Jewish community; movements of Jewish spirituality; divisions within Jewish society; the background of Emancipation and Enlightenment.

114 **History of the Jews in Islamic Lands (3)** Saperstein

The legal status of Jews under Islam; the impact of the Muslim conquest and Abbasid rule over the Jewish community of Babylon, the flourishing of Jewish civilization in Muslim Spain; Metatherian Jewish society in the Middle Ages; the Ottoman Empire; modernity and its effects.

115 **Messianic Movements and Ideas in Jewish History (3)** Saperstein

A survey of Messianism as a central force in Jewish history, stressing both theoretical implications and concrete manifestations. Topics include Biblical Christianity, the origins of Christianity as a Jewish Messianic movement, the Sabbatian movement, Zionism, and contemporary messianism.

116 **History of Africa (3)** Blyden

Survey of political, cultural, and economic development from ancient times to the present, with emphasis on the rise and demise of European colonialism.

117 **The British Empire (3)** D. Kennedy

The British Empire from its rise in the 17th century to its demise in the 20th century.

118 **China to 1800 (3)** McCord

Survey of Chinese civilization from its ancient beginnings to the last imperial dynasty.

121 **The Age of the Renaissance (3)** Staff

Emergence of new forms of expression, and politics and society in Europe from the 14th century to about 1650. Emphasis on Italy and the Byzantine background.

122 **The Reformation in Western Europe (3)** Staff

Religious, political, and social consequences of the theological upheavals of the 16th century.

123–24 **European Intellectual History (3–3)** E. Kennedy

Hist 123: The “Century of Genius” and the Enlightenment; God, nature, man, and society, from Descartes to the French Revolution. Hist 124: Responses to the French Revolution and the Enlightenment; historicism, evolution; nihilism, psychoanalysis; communism; fascism; existentialism, structuralism, postmodernism, and neo-orthodoxy.

125 **Women in European History (3)** Staff

A study of the role of women in the political, social, intellectual, and economic life of Europe from the Middle Ages to the 20th century.

126 **The United States and the Wars in Indochina, 1945–1975 (3)** Spector

The American role in the Indochina Wars, emphasizing the period 1961–1975, and from the perspectives of the Vietnamese, French, and Americans in Vietnam. Related intellectual and political developments in the United States; Cold War relationships with China and the Soviet Union.

129 **War and the Military in American Society from the Revolution to the Gulf War (3)** Spector

Social and psychological dimensions of war and military service.

130 **Sexuality in U.S. History (3)** Staff

Same as AmSt/WStu 130.

131–32 **History of Germany (3–3)** Zimmerman

Political, social, and cultural development. Hist 131: From mid-17th century to Bismarck. Hist 132: From William II to the present.

133 **Recent U.S. History, 1890–1945 (3)** Ribuffo, Berkowitz

Political, social, diplomatic, and intellectual developments, with particular emphasis on the “searching” ’20s and New Deal.

134 **Contemporary U.S. History Since 1945 (3)** Ribuffo

Political, social, diplomatic, and intellectual developments, with particular emphasis on the Cold War, “silent” ’50s, and disrupted ’60s.

135 **The Two Germanys and the Cold War (3)** H. Harrison

Why was Germany divided after World War II? Why did it stay divided for 45 years?

How was it reunited in 1990? This course examines developments in East and West Germany, relations between the two Germanys during the Cold War, their foreign policies, and how other countries treated them.

136 Europe in the 20th Century (3)

Staff

Diplomatic, political, and cultural developments from the turn of the century to the present. Credit may not be earned for both Hist 136 and 157. Prerequisite: Hist 40.

137–38 History of American Foreign Policy Since World War II (3–3)

Thornton

Emphasis on American and Soviet strategy and foreign policy in the era of the Cold War. Hist 137: World War II to the Vietnam War; Hist 138: Vietnam to the “New World Order.”

139–40 Women in the United States (3–3)

Murphy, C. Harrison

Survey of women’s experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. Same as AmSt/WStu 139–40.

141–42 History of France (3–3)

E. Kennedy

Hist 141: Old Regime: monarchy and social classes; the Church; the Enlightenment; the 1789 revolution; Napoleon. Hist 142: From 1814: breaks and continuities in the succession of regimes; the interplay between revolution and tradition; the weakened international position of France; Gaullism and the survival of France; European Unity.

143 The Making of the Modern Balkans (3)

Agnew

States of the Balkan peninsula—Slovenia, Croatia, Serbia and Montenegro, Bosnia, Albania, Macedonia, Greece, Bulgaria, and Romania—including developments since the

decline of the Ottoman Empire and the emergence of Balkan nationalist movements, and continuing through the collapse of the Soviet bloc.

144 **The Habsburgs in East Central Europe (3)** Agnew

History of the Habsburg monarchy in its East Central European Context. Reformation and Counter-Reformation; conflict with the Ottoman Empire; great-power competition in Europe; response to the Enlightenment and the French Revolution; the rise of nationalism; and final dissolution in World War I.

145 **Russia to 1801 (3)** Atkin

Survey of Russian history from the rise of the Kievan confederation in the ninth century to the establishment of Imperial Russia as a European great power. Attention will be given to the political, socioeconomic, and cultural history of the East Slavs, especially the Russians.

146 **Russia Since 1801 (3)** Atkin

Survey of Russian and Soviet history from the reign of Alexander I to the Stalin era. Attention will be given to the contending forces of revolution, reform, and conservatism; diplomatic relations; economic development; and social change.

147 **Victorian Britain (3)** D. Kennedy

Examines major themes in nineteenth-century British history: industrialism, democratization, urbanization, imperial expansion, class and gender schisms.

148 **The French Revolution (3)** E. Kennedy

Social, political, economic, and cultural history of the decade of revolution, 1789–1799. Attention to its structural consequences in France and in Europe at large.

149 **Spain and Its Empire, 1492–1700 (3)** Norton

Major transformations of the period: from cultural pluralism to ethnic homogeneity, from medieval fragmentation to imperial expansion in Europe and America; from religious reform to Catholic Reformation, from global dominance to decline.

150 **Twentieth-Century Britain (3)** D. Kennedy

Examines major themes of twentieth-century British history: industrial decline, imperialism and decolonization, the making of a welfare state, the cataclysm of global war, integration with Europe.

151–52 **History of England (3–3)** Peck

Development of English civilization and its impact on Western culture. Hist 151: To 1689. Hist 152: Since 1689.

153 **Tudor England (3)** Peck

Aspects of the constitutional, social, intellectual, economic, and religious development of England, 1485–1603.

154 **Stuart England (3)** Peck

The civil wars, Restoration, and Glorious Revolution. Political, religious, socioeconomic, and intellectual developments in England, 1603–1714.

157 **20th-Century European Diplomatic History (3)** Staff

The main currents, with necessary 19th-century background, and related attention to the Middle East. Credit may not be earned for both Hist 136 and 157. Prerequisite: Hist 40.

158 **Modern Jewish History (3)** Staff

A secular history of the Jewish people from the 18th century to the present state of Israel; emphasis on European and Middle Eastern political, economic, and cultural influences.

159 **The Holocaust (3)** Saperstein

The origins, causes, and significance of the Nazi attempt to destroy European Jewry, within the context of European and Jewish history. Related themes include the behavior of perpetrators, victims, and bystanders; literary responses; contemporary implications of the Holocaust for religion and politics.

160 History of the Jewish People in America (3) Staff

The study of the Jewish minority in America from colonial times to the present.

Emphasis on the interaction between a powerful majority culture and that of protean minority people. Prerequisite: Hist 39–40 or 71–72.

161 Jewish Historical Writing (3) Saperstein

A survey of Jewish attitudes toward history and examples of Jewish historiography beginning with the Hebrew Bible. Emphasis will be on medieval and Renaissance historians and on the flourishing of historical writing in the past 150 years in Europe, Israel, and the United States.

162 20th-Century Latin America (3) Klarén

A survey of the main societal trends shaping Latin America in this century, with particular emphasis on such themes as populism, urbanization, reformism, modernization, nationalism, revolution, the military dictatorship, and the development process.

163–64 History of Latin America (3–3) Klarén

Hist 163: Analysis of Spanish and Portuguese imperialism in the New World, 1492–1820. Hist 164: A problems approach to Latin America, 1820 to the present; thematic emphasis on neocolonialism, corporatism, liberalism, *caudillismo*, modernization, populism, and revolution.

165 Revolution in 20th-Century Latin America (3) Klarén

Examination of the major social revolutions in modern Latin America, especially in Mexico, Bolivia, Cuba, and Nicaragua; their origins, ideology, process, and outcomes.

166 **Immigration, Ethnicity, and the American Experience (3)** Anbinder

Examination of the role of immigration, ethnicity, and ethnic conflict in American life, past and present, with particular attention to the urban immigrant experience, and the prevalence of anti-immigrant sentiment throughout U.S. history.

167 **Themes in U.S. Cultural History (3)** Staff

Same as AmSt 167.

168 **America Before 1764 (3)** Silverman

An examination of prehistory, colonization, and the shifting dynamics among European Americans, African Americans, and Native Americans before 1764.

169 **Revolutionary America (3)** Silverman

An examination of the War of Independence and other events that reshaped life for Native Americans, African Americans, and European Americans in the era of the American Revolution; emphasis on a continental approach to the period.

171–72 **U.S. Social History (3–3)** Horton, Stott

Hist 171: Daily life, institutions, intellectual and artistic achievements of the agrarian era, 1607–1861. Hist 172: The urban–industrial era from 1861 to present. Same as AmSt 171–72.

173 **African American History (3)** Horton, Alexander

Survey of the African American experience, emphasizing the contributions of black Americans to and their impact upon American history. Same as AmSt 173.

175 **U.S. Constitutional History (3)** C. Harrison

Examination of the text and interpretation of the document that is the foundation of the American government, with special attention to the changing character of race and gender as constitutional classes.

176 **The Modern American Presidency (3)** Berkowitz

The development of the modern American presidency, from Theodore Roosevelt to Bill Clinton, examining the intersection of personal and impersonal forces in the creation of modern America.

177 **The Jacksonian Era and the Rise of Mass Politics (3)** Anbinder

The period 1828–1860 and its continuing significance to American society; emphasis on racial and gender divisions and changes in the legal and political systems.

178 **History of the American West (3)** Stott

The interaction of environment and cultures among the different peoples vying for occupancy of the trans-Mississippi region of the United States from the early 19th century to the present.

179 **U.S. Economic History (3)** Berkowitz

Survey of American economic history from colonial times to the present. Particular attention is given to the economics of slavery, the development of a national industrial economy, and the growth of the federal government as an influence on economic policy.

181 **U.S. Media and Cultural History (3)** Staff

Same as AmSt 181.

182 **U.S. Diplomatic History (3)** Hershberg

American foreign relations in the 20th century.

183 **International History of the Cold War (3)** H. Harrison, Hershberg

Key events and themes of the Cold War, drawing on new evidence from U.S., Soviet, Chinese, German, East European, Vietnamese, Cuban, and other sources. Related historiographical controversies from multiple national perspectives. Why the Cold War began, why it lasted for 45 years, and why it ended.

- 184 **Civil War and Reconstruction (3)** Anbinder

How tensions between the sections developed into violence, how a total war was fought on American soil, and how the experience of war affected the generation that lived through it.

- 185 **Black Women in U.S. History (3)** Alexander

Black Women from the Middle Passage to contemporary times. Same as AmSt/WStu 185.

- 186 **U.S. Urban History (3)** Heap

The American city from colonial foundations to the present, relating social and economic forces to physical form. Special emphasis on transitions from preindustrial to industrial to metropolitan forms, focusing on implications for public policy and historic preservation. Same as AmSt 186.

- 187 **History of Modern China (3)** McCord

China since 1840, with particular attention to political developments.

- 188 **History of Chinese Communism (3)** Thornton

Survey of the leadership, ideology, structure, and foreign and domestic policies of the Chinese Communist Party from its inception to the present.

- 189 **History of Modern Japan (3)** Yang

Japan's century of modernization—from the Meiji Restoration of 1868 to the present.

Emphasis on historical, political, economic, and cultural factors.

- 190 **History of Korea (3)** Larsen

An introduction to the history and culture of Korea from antiquity to the present.

- 191 **Senior Honors Thesis (3)** Staff

Required of and open only to undergraduate honors candidates in history.

- 192 **Internship (3)** Staff

Study of history through internships in museums, libraries, Congress, or other appropriate institutions and agencies. Prerequisite: approval of department.

- 193 **History of the Middle East (3)** Khoury

Byzantine, Arab, Persian, and Islamic backgrounds; rise and decline of the Ottoman Empire; action of European powers in the area; Ottoman breakup into the Turkish Republic and other states.

- 194 **History of the Modern Middle East (3)** Khoury

Beginning with Napoleon's invasion of Egypt. Development of nationalism and of modern states; impact of the West on culture and institutions; great-power imperialism; crises of Turkish Straits, Suez, Arab-Israeli relations; and other issues.

- 196 **The Modern Transformation of East Asia (3)** McCord, Yang

The social, institutional, and intellectual transformation of China, Japan, and Korea from the mid-19th century to the present.

- 198 **Readings for the History Major (3)** Staff

Required of history majors; this course should be taken during the junior or senior year. Readings and discussions on major trends in history; representative selections from the

classics of historical literature. Students who receive credit for Hist 198 cannot receive credit for Hist 201.

199 **Thesis Seminar (3)**

Staff

Required of history majors. Usually taken in the junior year. A research paper is prepared using primary sources. Students who earn a grade of *A* or *A–* may be eligible to take Hist 191; check with the department.

HONORS

Interim Director G. Baxter

Assistant Professors W. Winstead, T. Michael, A. Pichanick

University Honors Advisory Committee

H. Agnew, S. Badie, F. DuVinage, R. Heller, L. Jacobson, G. Jostova, D. Khoury, L. Maddox,

H. Nau, M. Pardavi-Horvath, G. Stephens, P. Sullivan, J. Ziolkowski

The University Honors Program offers a program of enhanced study to undergraduates.

Incoming students may apply to the Honors Program when they apply for admission to the University; current GW students may apply after completing one semester at GW.

Scholastic Requirements—All Honors Program students must take one or more Honors courses each semester and maintain a cumulative GPA of 3.4 or higher. For each semester that Honors students meet this requirement, their transcripts will be marked “University Honors Program Scholar.” Students who fail to maintain a cumulative GPA greater than 3.4 or to take an Honors course in a given semester are considered probationary members and their transcripts are marked “Member, University Honors Program.” Students whose cumulative GPA falls to the level from which it is impossible to graduate with a cumulative GPA of 3.4 or higher are

removed from the Program. Freshmen who do not achieve a cumulative GPA of 3.0 are removed from the Program.

General Requirements—Freshman students must take the first-year Honors Proseminar (Honr 15–16) and may also take any Honors course numbered below 100. Each student in the Honors Program must complete a senior thesis or research project, which may be an Honors senior thesis; the course, seminar, or paper for departmental special honors; or one of the senior seminars offered by the Honors Program. Under appropriate conditions, the senior project may be done during the junior year.

Students may get Honors credit for internships or regular University courses through course conversion by making arrangements through the Honors Program offices. CCAS and Elliott School students who wish to do this must have completed 60 credit hours of course work; School of Business and SEAS students must have completed 30 hours.

Honors Courses—The Honors Program offers a wide range of courses that varies from semester to semester, depending upon the availability of faculty and department resources. The Honors Program offices provide a current list of courses offered. Honors courses numbered below 100 are open to all Honors Program students and fulfill curriculum requirements in at least one of the schools. Courses numbered 105 to 179 are open to all sophomore, junior, and senior Honors Program students and to other qualified students on a space-available basis (qualified students are those who meet the grade-point requirements that students in the Honors Program must maintain at that level). Courses numbered in the 180s are open to all junior and senior Honors Program students, and courses in the 190s are senior seminars.

When an Honors course covers the content of a departmental course, credit is not allowed for both. Please check with the Honors Program offices for a list of course equivalents. In most instances, applicable Honors courses may be substituted for program requirements; students should consult with their advisors to determine applicability.

A full description of the University Honors Program is provided in the Honors Program Handbook, available at the Honors Program offices or at www.gwu.edu/~uhpwww/. The website also gives a list of current classes and activities of the Honors Program.

15–16 **Honors Proseminar** (3–3) Staff

Required for first-year students in the Honors Program. The classical texts and major ideas of various civilizations that form the fundamental bases of modern thought. Honr 15: Ancient origins of modern thought. Honr 16: Development of modern thought through recent times. (Academic year)

25 **Honors Introduction to Logic** (3) Staff

Methods of deductive and inductive logic with emphasis on sentential calculus. Argument analysis, recognition of fallacies, legal reasoning, and practical application of knowledge. (Fall and spring)

28 **Honors Statistics** (3) Staff

Statistical reasoning as it relates to public policy, particularly medical, economic, and social policy. Emphasis on the philosophical basis of statistics. (Fall and spring)

33–34 **Honors General Chemistry** (4–4) Zysmilich

An accelerated introductory chemistry course that includes special and advanced topics. Emphasis on laboratory research. Prerequisite: one year each of high school algebra with

trigonometry and chemistry with laboratory. Laboratory fee, \$60 per semester. (Academic year)

41 **Honors Introduction to Sociology** (3) Staff

An introduction to the field through the writings of the pioneer researchers, including Emile Durkeim, Max Weber, George Herbert Mead, and Karl Marx. (Fall and spring)

43 **Honors Microeconomics** (3) Staff

An introductory microeconomics course that considers both the philosophical basis of economics as well as its methods and applications. (Fall)

44 **Honors Macroeconomics** (3) Bradley and Staff

An accelerated introductory macroeconomics course that includes the study of special topics. (Spring)

45 **Honors Introduction to Comparative Politics** (3) Staff

Methods of finding similarities and differences across political systems related to the state, political culture, and other aspects. (Fall)

52 **Honors Creative Writing** (3) Wallace

An introduction to fiction and poetry writing in which student writing is the primary focus. (Fall and spring)

59 **Honors Introduction to Acting** (3) Staff

Practical acting skills and the theory underlying method acting. Emphasis on the writings of Stanislavsky and his followers. (Fall and spring)

110 **Honors University Symposium** (0 or 1) Stephens

An intensive three-day course that brings together prominent speakers in a selected field and University faculty and students for lectures and discussion. (Fall and spring)

- 125 **Justice and the Legal System (3)** Kasle

An examination of justice from a legal and philosophical point of view. The course will be taught as a law class using the Socratic method. (Fall)

- 136 **Issues and Innovation in American Education (3)** Paley

An introductory course that explores various spheres in American educational thought and practice. Historical, psychological, sociological, and pedagogical standpoints are considered. (Spring)

- 170 **Special Topics in Literature and Theatre (3)** Staff

This course examines dramatic texts across historical periods and regional or national boundaries.

- 175 **Honors Special Topics (1 to 4)** Staff

Topics are announced in the *Schedule of Classes* and the Honors Preregistration newsletter. (Fall and spring)

- 180 **Honors Course Conversion (0)**

Requires students to complete additional in-depth course work in a non-Honors course.

- 182 **Honors Internship (1 to 3)** Stephens

Off-campus internship, usually in the student's major field. Includes regular assignments to put the work in a broader context. (Fall and spring)

- 184 **Honors Independent Study (0 to 3)** Staff

Independent study conducted in close cooperation with a faculty member.

- 185 **Honors Research Assistantship (0 to 3)**

- 196 **Honors ESIA Senior Seminar (3)** East

This course compares the ways nations conduct their foreign policies on various issues.

Fulfills Honors senior thesis requirement. (Spring)

198 **Honors Thesis (3)** Staff

A one- or two-semester thesis under faculty guidance. May be repeated for credit. (Fall and spring)

199 **Senior Seminar (3)** Staff

Interdisciplinary approach to the Honors senior thesis requirement. Includes a weekly seminar to guide students through the senior thesis process. (Fall and spring)

HUMANITIES

1 **Roots of the Western Tradition (3)** Cook

Basic ideas of Western thought from early Greek, Roman, Judaic, and Christian traditions. Representative readings in drama, epic, historical writings, oratory, creation stories, scriptural traditions, philosophy, and spiritual autobiography.

2 **Ideas in Western Culture: Aquinas to Locke (3)** Staff

An examination in historical context of central texts from the Middle Ages, the Renaissance, and the Enlightenment: Aquinas, Dante, Machiavelli, Erasmus, Luther, Montaigne, Bacon, Shakespeare, Rabelais, Descartes, Milton, and Locke.

3 **The Enlightenment (3)** Ganz

Primary works representative of 18th-century European and American culture, examined from thematic and historical perspectives. Music, drama, poetry, the novel, art, architecture, economics, philosophy, and science are among the subjects included; 18th-century notions of Nature, reason, liberty, equality, natural law, and the question of human perfectibility.

4 **Romanticism and Revolution: The 19th Century (3)** Plotz

Major themes of 19th-century culture from 1789 to 1900 in representative works of European and American art, literature, music, drama, philosophy, and the-ology. The 19th-century resources of Washington—museums, monuments, collections, concerts, plays—form part of the curriculum.

5 **The 20th-Century Consciousness (3)** Staff

Major themes and paradigms of 20th-century civilization as expressed in key literary and philosophic texts, visual arts, music, and cultural artifacts. Key issues include the meaning of history in the age of two world wars; the Holocaust and the crisis of reason; the authority of science; the decline of Western hegemony; modernism and postmodernism.

6 **Asian Humanities (3)** Chaves, Kim-Renaud

The traditional art and literature of the cultures of South Asia (India, Pakistan, Sri Lanka, Tibet) and East Asia (China, Korea, Japan). Attention to religious and philosophical systems as well as to continuities and changes in modern Asian culture.

7 **African Humanities (3)** Blyden

An introduction to the literature, art, and philosophy of the African continent in historical, cultural, and geographic contexts. Overview of sculpture, rock painting, and architecture; the oral tradition and modern literature; traditional philosophies and religions. The roles of Islam and Christianity in Africa.

8 **Islamic Humanities (3)** Khoury

Facets of Islamic civilization, including the defining features of the Islamic tradition and the history within which it has unfolded. The diversity within the Islamic community is considered, especially in its encounter with modernity.

INTERNATIONAL AFFAIRS

University Professors L.A. Etzioni, J.N. Rosenau

Professors G.M. Adams (*Practice*), C.J. Allen, H.G. Askari, M.A. Atkin, W.H. Becker, E.

Berkowitz, A. Black (*Research*), B.L. Boulter, M.D. Bradley, M.E. Brown, N.J. Brown, J.

Chaves, J.J. Cordes, W.K. Cummings, H.J. Davis, C.J. Deering, B.J. Dickson, R.M. Dunn,

Jr., H.B. Feigenbaum, J. Ferrer (*Research*), M. Finnemore, L. Fuerth (*Research*), E.W.

Gnehm, J. Goldgeier, D. Gow (*Practice*), R. Grinker, H. Harding, P. Hotez, K.F. Inderfurth

(*Practice*), G. Kaminsky, D.K. Kennedy, R.E. Kennedy, Jr., Y.K. Kim-Renaud, P.F. Klarén,

J. Kuipers, G. Ludlow, M. Marquardt, C. McClintock, B.D. Miller, M.O. Moore, H.R. Nau,

J. Pelzman, J.M. Post (*Practice*), B. Reich, W. Reich, L.P. Ribuffo, F. Robles, R.W. Rycroft,

S. Sell, D. Shambaugh, S.C. Smith, M. Sodaro, R.H. Spector, R. Steinhardt, J.-F. Thibault,

R. Thornton, N.S. Vonortas, R. Weiner, R. Williamson (*Research*), S. Wolchik, H.L.

Wolman, A.M. Yezer

Associate Professors H.L. Agnew, D. Avant, S. Balla, N. Blyden, A. Bowie, J. Brinkerhoff, Y.

Captain, E. Chako, R.W. Click, M. Gonglewski, D.A. Grier, M. Haider, S. Hamano, H.M.

Harrison, J. Hershberg, D. Khoury, K.W. Larsen, J.H. Lebovic, D.L. Lee, S. Livingston, M.

McAlister, E.A. McCord, S. McHale, M.M. Mochizuki, M. Price, S. Rehman, R. Robin, P.

Rollberg, R.M. Samaniego, A.E. Searight, M.B. Stein, S. Suranovic, H.J. Teegen, R. Weiner,

J.H. Williams, L. Willnat, D. Yang, J. Yang

Assistant Professors G. Brazinsky, M. Cipriani, M.S. Emran, I.L. Hanami, K. Lord, S.

Lubkemann, K. Morgan, E.A. Posner, C. Rector, L.A. Riddle, J. Ryfa, E. Voeten, A.

Zimmerman, P.N. Zhang

Adjunct Professors S. Commins, S. Johnson, M. Kuchinsky, J. Mendelsohn, B. Powers

(*Practice*), D. Shinn, R. Sutter, W. Wise

Adjunct Assistant Professor K. Healy

The Elliott School of International Affairs offers a multidisciplinary program leading to the degree of Bachelor of Arts in the field of international affairs. The program provides students with a broad background in the general areas of international affairs as well as a solid liberal arts education focusing on an understanding of major historical and contemporary issues in international affairs.

Bachelor of Arts with a major in international affairs—The following requirements must be fulfilled.

1. The general curriculum requirements stated under the Elliott School of International Affairs.
2. Required courses for the major—Econ 181–82; one course selected from Hist 137, 138, 182; one course selected from approved sections of Hist 101, 135, 136, 157, 183; one course selected from PSc 139, 140, 142, 144, 146, 149; one course chosen from an approved list of Anth/Geog/PubH courses; and third-year language proficiency. Students must take a research methods course to be chosen from among Anth 117; Geog 105; PSc 101; Psyc 101; Soc 101, 111, 112; Stat 51, 53, 105, 111, 127, 129.
3. Concentration—The Elliott School offers a large number of functional and regional concentrations toward the major in international affairs. Each student chooses 15 credit hours of additional course work in one of the following concentrations. Functional:

international politics; international economics; comparative political, economic, and social systems; international development; contemporary cultures and societies; conflict and security; global public health; international environmental resources. Regional: Africa, Asia, Europe and Eurasia, Latin America, Middle East. The Elliott School maintains lists of courses that may be applied toward each of these concentrations. In addition to the courses that appear on these lists, Topics courses and 700 Series courses may be included as part of the required 15 credit hours if approved by the advisor.

Special Honors—In addition to the general requirements stated under University Regulations, a candidate for Special Honors in international affairs must have attained a 3.4 grade-point average overall and complete either an Elliott School or Honors senior seminar, or an Honors senior thesis or a major independent study research project approved by the program director. Students must apply for honors candidacy prior to the beginning of the senior year.

The following courses carry the International Affairs (IAff) designation. All other courses listed above will be found under the appropriate department designation.

- | | | |
|----|---|---------------|
| 5 | Introduction to International Affairs: A Washington Perspective (4) | Staff |
| | A required course for Elliott School freshmen. An introduction to the study of international affairs, while integrating material designed to orient students to the Elliott School, the University, and the city of Washington, and the study of international affairs. Open only to first-year students in the Elliott School. (Fall and spring) | |
| 90 | Latin America: Problems and Promise (3) | Klarén, Price |
| | An interdisciplinary course in Latin American studies designed to introduce undergraduates to the diverse, rich, and complex history, politics, economy, culture, and society of Latin America. (Fall) | |

- 91 **East Asia—Past and Present (3)** Larsen, McCord, McHale, Yang
- An interdisciplinary course offering a comprehensive and integrated introduction to the civilization and present problems of East Asia. (Spring)
- 92 **Russia and Eastern Europe: An Introduction (3)** Staff
- A multidisciplinary introduction to the lands and cultures of the former Soviet Union and Central and Eastern Europe. The main emphasis is on history and politics, with attention also given to economics, trade, geography, military matters, literature, and the media. (Fall)
- 93 **Africa: Problems and Prospects (3)** Staff
- Aspects of the environment, culture, and politics as they affect the present and anticipated future of Africa. (Spring)
- 94 **Europe: International and Domestic Interactions (3)** Sodaro
- A multidisciplinary view of contemporary Europe, including the E.U. states, other states of Eastern Europe, and Turkey. The widening processes of political, judicial, economic, cultural, and security integration. Prerequisite: IAff 5, PSc 1, Hist 136 or 157. (Spring)
- 190 **Special Topics (1 to 3)** Staff
- International affairs issues of a current or topical nature. Topics announced in the *Schedule of Classes*. May be repeated for credit provided the topic differs.
- 191 **Senior Seminar (3)** Staff
- Intensive readings, discussion, research, and writing. Departmental approval required.
- 195 **Internship (0 to 3)** Staff

Internships in public, private, and nonprofit organizations concerned with international affairs. Admission by permission of instructor and Elliott School Office of Student Services.

198 **Independent Study and Research** (1 to 3) Staff

For upper-division students only. Written permission of instructor required. May be repeated for credit with permission of the dean.

INTERNATIONAL BUSINESS

Professors Y.S. Park, H.G. Askari, F. Robles, R. Weiner, J. Yang, H.J. Teegen, S.S. Rehman

Associate Professors R.W. Click (*Chair*), J. Ferrer (*Research*), J.W. Spencer, J. Forrer (*Research*)

Assistant Professors P. Dastidar, L.A. Riddle, M. Ayyagari, R. Kosova, A. Kirca

See the School of Business for programs of study leading to the degree of Bachelor of Business Administration.

160 **Introduction to International Business** (3) Spencer, Dastidar, Riddle, Ayyagari, Kosova, Kirca

The international business environment, including social, cultural, political, technological, and institutional domains. Multinational corporation strategic imperatives and organizational challenges, including financial, marketing, human resources, and other aspects of management. Prerequisite: Econ 11–12; prerequisite or corequisite: BAdm 145 or Econ 181 or 182. (Fall and spring)

164 **Managing the Multinational Enterprise** (3) Spencer, Kosova, Robles, Teegen

The changing nature of the international environment and the resulting effects on strategy of U.S. and foreign multinational corporations. Prerequisite: IBus 160. (Spring)

166 International Marketing Management (3) Robles, Riddle, Kirca

Introduction to international marketing analysis and strategy, and the dynamic nature of international markets. Analysis of different types of international markets and formulation of initial entry strategies. Prerequisite: BAdm 110, 145 or Econ 181 or 182. (Fall and spring)

168 Foreign Market Analysis (3) Robles, Teegen

Project course involving global market research for target market selection, market entry strategy and in-country marketing plan development and financial implications of recommended global marketing strategy. Focus on consulting process as ancillary component. Prerequisite: IBus 160, 166.

171 International Business Finance (3) Rehman, Yang, Click, Dastidar, Ayyagari

Analysis of the international economic environment and its influence on corporate financial management of international operations. Prerequisite: BAdm 115, 145 or Econ 181 or 182. (Fall and spring)

173 International Banking (3) Park

Theory and practice of international banking; analysis of international commercial and investment banking from a management perspective; subjects include current international monetary and financial environment, money and capital markets, and topical problems of international banking from a management perspective. Prerequisite: IBus 171.

175 International Monetary and Financial Issues (3) Askari, Rehman, Yang, Dastidar

International macro and micro issues of money, banking, and finance examined from a management perspective. Topics include globalization, international monetary systems,

Eurocurrency markets, LDC debt crises, and the role of the IMF and the World Bank.

Prerequisite: IBus 171 or permission of instructor.

190 Special Topics (3)

Staff

Experimental offering; new course topics and teaching methods.

199 Independent Study (arr.)

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. (Fall and spring)

ITALIAN

See **Romance, German, and Slavic Languages and Literatures.**

JAPANESE

See **East Asian Languages and Literatures.**

JOURNALISM AND MASS COMMUNICATION

See **Media and Public Affairs.**

JUDAIC STUDIES

Committee on Judaic Studies

M.E. Saperstein (*Director*), N. Brown, E. Cline, J. Cohen, P. Duff, R. Eisen, A. Etzioni, L.

Jacobson, Y. Moses, F. Moskowitz, Y. Peleg, B. Reich, W. Reich, M. Ticktin

Columbian College of Arts and Sciences offers an interdisciplinary program in Judaic studies leading to the degree of Bachelor of Arts. This program is intended for students who wish to investigate the history, language, literature, religious and philosophical thought, and political and social experience of the Jewish people from the perspective of several academic disciplines. (Students who wish to concentrate on the religious aspects of Judaism and its relationship to the other religious traditions of the world may prefer to elect a major in religion with an emphasis on

Judaism [see Religion].) Students who have studied abroad should verify the residence requirements of Columbian College of Arts and Sciences.

Bachelor of Arts with a major in Judaic studies—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.

2. Required courses for the major (43 credit hours):

(a) Hebr 1–2, 3–4; Hist 113 or 114 or 115; Hist 158 or approved equivalent; Rel 9 or Hist 108; Rel 106 or 107; PSc 176 or 179.

(b) Two courses in literature; may be in Hebrew, including Hebr 103, 104, 120–21, or in translation, including Clas 100, 101, 102.

(c) Two courses selected from the list below; substitutions are permitted with the approval of an advisor designated by the Committee on Judaic Studies.

Minor in Judaic studies—Required: Hebr 1–2 and a minimum of 12 credit hours, chosen in consultation with an advisor designated by the Committee on Judaic Studies, from the courses listed below. (Of the 12 credit hours, at least 6 must be taken at GW and at least 6 must be in courses other than Hebrew language study.)

Anth 188 *Archaeology of Israel and Neighboring Lands*

Clas 100 *Modern Hebrew Literary Classics*

Clas 101 *Israeli Society and Culture: Literary Perspectives*

Clas 102 *Contemporary Israeli Short Stories and Poetry*

Engl 188 *Jewish American Writing*

Hebr 1–2 *Beginning Hebrew*

Hebr 3–4 *Intermediate Hebrew*

Hebr 103 *Modern Hebrew Nonfiction*

Hebr 104	<i>Modern Hebrew Fiction</i>
Hebr 106	<i>The Israeli Media</i>
Hebr 120–21	<i>Advanced Hebrew Literature</i>
Ydsh 1–2	<i>Yiddish for Reading and Conversation</i>
Hist 108	<i>History of Ancient Israel</i>
Hist 113	<i>History of the Jews in Christian Europe to the 18th Century</i>
Hist 114	<i>History of the Jews in Islamic Lands</i>
Hist 115	<i>Messianic Movements and Ideas in Jewish History</i>
Hist 158	<i>Modern Jewish History</i>
Hist 159	<i>The Holocaust</i>
Hist 161	<i>Jewish Historical Writing</i>
Hist 292	<i>Israel, Zionism, and the Arab World</i>
PSc 176	<i>The Arab–Israeli Conflict</i>
PSc 179	<i>Israeli Politics and Foreign Policy</i>
Rel 9	<i>Bible: Hebrew Scriptures</i>
Rel 103	<i>The Prophets</i>
Rel 106	<i>Judaism</i>
Rel 107	<i>Rabbinic Thought and Literature</i>
Rel 112	<i>Jewish Mysticism</i>
Rel 113	<i>Early Post-Biblical Judaism</i>
Rel 115	<i>Jewish Philosophy in the Medieval Period</i>
Rel 118	<i>Women in Judaism</i>
Rel 116	<i>Modern Jewish Thought</i>

Rel 123 *Issues in Jewish Ethics*

Rel 134 *The Holocaust in Theology and Literature*

Rel 174 *American Judaism*

KOREAN

See **East Asian Languages and Literatures.**

LATIN

See **Classical and Semitic Languages and Literatures.**

LATIN AMERICAN AND HEMISPHERIC STUDIES

Program Committee: J. Ferrer (*Director*), C.J. Allen, M. Byrnes, K. Healy, P.F. Klarén, C. McClintock, M. Price, I. Vergara

The Elliott School of International Affairs offers a multidisciplinary program leading to a Bachelor of Arts with a major in Latin American and hemispheric studies.

Bachelor of Arts with a major in Latin American and hemispheric studies—The following requirements must be fulfilled.

1. The general curriculum requirements stated under the Elliott School of International Affairs.
2. Required courses for the major—IAff 90; Econ 185; PSc 183, 184; Geog 161; Hist 163, 164; one course chosen from Anth 170, 172, 185, 186; one approved course in Spanish-American literature.
3. Six additional credit hours of related course work at the 100 level must be taken in anthropology, art history, economics, geography, history, international affairs, political science, and/or Hispanic literature.
4. Completion of third-year–level language study in Spanish (Span 10) or another approved foreign language.

Special Honors—In addition to the general requirements stated under University Regulations, a candidate for Special Honors in Latin American and hemispheric studies must have attained a 3.4 grade-point average overall and complete either an Elliott School or Honors senior seminar, or an Honors senior thesis or a major independent study research project approved by the program director. Students must apply for honors candidacy prior to the beginning of the senior year.

Students should consult the program guidelines available from the Elliott School for courses pertinent to Latin American and hemispheric studies. Students should consult the program director concerning certain Special Topics or Selected Topics courses that may also be part of this program.

LIBERAL ARTS

Advisor H. Yeide

Bachelor of Arts: Program in the Liberal Arts—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. *Writing*—7 credit hours from UW 20, Engl 100, 101, 111, and/or creative writing courses.
3. *Quantitative and Logical Reasoning*—6 credit hours (see Category 2 under Columbian College of Arts and Sciences General Curriculum Requirements).
4. *Natural Sciences*—12 credit hours selected from at least two of the following fields: biology (including biological anthropology), chemistry, geology, and physics (including astronomy).
5. *Social and Behavioral Sciences*—12 credit hours: (a) 6 hours selected from anthropology (except biological anthropology), geography, psychology, and/or sociology; and (b) either 6 hours of economics or 6 hours of political science.

6. *The Arts*—3 credit hours selected from fine arts, creative writing, dance performance, electronic media performance, applied music (jazz performance, a single instrument, or a single ensemble), and theatre performance. A creative writing course may count for either this requirement or the Writing requirement but not both.

7. *Literature*—12 credit hours of which 6 hours are a survey or sequence in English literature and 6 hours are selected from literature courses (in either a natural language or translation) offered by the foreign language departments, the Department of Religion, or the University Honors Program. Some courses may count for either this requirement or the Humanities requirement but not both.

8. *Humanities*—15 credit hours: (a) 6 hours selected from American studies, history, and/or women's studies; (b) 6 hours selected from classics, humanities, philosophy, religion, or honors (with approval of the advisor); (c) 3 hours selected from art history, music, or theatre and dance.

9. *Foreign Language*—6 credit hours beyond the second-year sequence.

10. A minimum of 36 credit hours must be taken in approved 100-level liberal arts courses (with a grade of C- or better).

Special Honors—In addition to the general requirements stated under University Regulations, in order to be considered for graduation with special honors, a student must maintain a cumulative 3.5 grade-point average in all courses taken at GW and earn an *A* in at least six of the 12 required 100-level liberal arts courses.

Because this program allows considerable flexibility, a student should consult the advisor frequently to ensure that requirements are being addressed and that the planned program best meets the student's evolving interests and needs. The major in Liberal Arts may be combined

with a second major. See Interdisciplinary Programs under Columbian College of Arts and Sciences for a general description of this program.

LINGUISTICS

Committee on Linguistics

L. Bland, S. Hamano, Y.-K. Kim-Renaud, J. Kuipers, R.M. Robin

Columbian College of Arts and Sciences offers an interdepartmental program in linguistics. The purpose of the program is to provide a systematic treatment of the central issues in linguistics through courses taught under the auspices of the program and through other departments in Columbian College.

Minor in linguistics—15 credit hours of courses in linguistics, including Ling 101 and four courses from the following groups. Psycholinguistics—Ling 102. Applied Linguistics—Chin 123–24; SpHr 130, 131. Biological Foundations of Language—SpHr 105, 106. Sociolinguistics—Anth 161, 162; Phil 214 (with permission of instructor). Academic advising about the minor in linguistics is available from any member of the Committee on Linguistics.

101 **Language and Linguistic Analysis** (3) Staff

Development of a fundamental understanding of the nature of language and its components, including phonology, morphology, syntax, semantics, and pragmatics. Discussion of major approaches, principles, and concerns in the field of linguistics. Same as Anth 168. (Spring)

102 **Psycholinguistics** (3) Staff

Language as species-specific property of the human mind. Psychological processes involved in the encoding and decoding of language; first and second language acquisition and bilingualism. Same as Anth 163. (Spring)

MANAGEMENT SCIENCE

Professors W.E. Halal, E.H. Forman, S.A. Umpleby, E.K. Winslow, J.H. Carson, P.W. Wirtz,

E.J. Cherian (*Chair*), J.H. Perry, P.K. Bagchi, J.P. Coyne, R. Soyer, M.J. Granger, J.

Bailey, E.G. Carayannis, P.M. Swiercz

Associate Professors T.J. Nagy, R.G. Donnelly, W.H. Money, D.L. Zalkind, J. Artz, L.

Williams, S.Y. Prasad, M.M. Tarimcilar, P. McHugh, S. Kanungo, T. Glickman, C.

Goldberg, M.A. Gowan, S. Dasgupta, G.T. Solomon, D.F. Cioffi

Assistant Professors J. Feinstein, F.T. Anbari, Y.H. Kwak, R.A. Lumley, T.H. Rosen, P.

Weiss, M.M. Hammad, N.M. Brenner, H. Khamooshi, V. Sahasrabudhe, D.C. Kayes, M.D.

Haddad, S.C. White, T.M. Nielsen, M.E. Matta, S. Jain

Adjunct Associate Professor C.N. Toftoy

Professorial Lecturers E. Marits, D. Harris, D. Karlgaard, P. Oliver

Associate Professorial Lecturers C.A. Gruel, J. Barker, C.O. Bevis, S.M. Barry-Oliver, C.V.

Feudo, J.P. Sagi, M.J. Spina, J.A. Williams

As this Bulletin was prepared for press, the Management Science Department was reconfigured into the Decision Sciences, Information Systems and Technology Management, and Management Departments. See www.gwu.edu/~business for courses under the designations of DnSc, ISTM, and Mgt, respectively.

110 **Applied Human Resource Management (3)**

McHugh, Swiercz

The labor force and labor markets. The legal environment of human resource management. Human resource planning; employee recruiting, selection, training, development, compensation, motivation, discipline, health and safety. Prerequisite: BAdm 130.

115 **Leadership (3)** Swiercz

Leadership in organizations and in society. Consideration of whether leadership is a personal trait or a structured behavior and whether it is universal across domains or situation specific. Modern and historical examples; issues of leadership in popular contexts. Prerequisite: BAdm 130. (Fall)

116 **Advanced Topics in HRM (3)** Swiercz

Advanced examination of contemporary practices in human resource management, including recruitment and selection, training and development, performance appraisal, compensation and benefits, and employee relations. Student interaction with practitioners through field experiences, case analyses, and experiential exercises. Prerequisite: BAdm 130; Mgt 117. (Spring)

117 **Labor Relations, Negotiation, and Conflict Resolution (3)** McHugh

Introduction to labor–management relations. Labor law; economic, social, and public policy implications of collective bargaining; negotiation and conflict resolution in union and non-union workplaces. Prerequisite: BAdm 130.

119 **Introduction to Structured Programming (3)** Brenner

For students already familiar with basic computer concepts, who will learn a programming language, such as Visual Basic, useful for business applications. Emphasis on computer applications in accounting and management information systems through hands-on programming. Prerequisite: BAdm 64. (Fall and spring)

120 **Structured Development with CASE (3)** Dasgupta, Granger

Analysis, design, and implementation of management information systems (MIS). Structured methodologies and techniques for various stages of the MIS development

process. Computer-aided software engineering tools. May be taken for graduate credit with permission of program director and instructor. Prerequisite: Mgt 119 or permission of instructor. (Fall and spring)

121 Database Design and Applications (3) Granger, Dasgupta

Theory, architecture, and implementation of database management systems in corporate and organization information systems. Fundamental concepts of database management and processing. Expert database systems. Hands-on experience with database management packages. Prerequisite: Mgt 119 or permission of instructor. (Spring)

123 Business Data Communications (3) Prasad, Dasgupta

A technical overview of data communication concepts that are useful in the design and management of local and wide area networks. Internet technologies and their business applications are emphasized. Prerequisite: BAdm 64. (Spring)

190 Special Topics (3) Staff

Experimental offering; new course topics and teaching methods. May be repeated once for credit.

192 Small-Business Management (3) Toftoy, Solomon

Theory and practice of entrepreneurship. Effective management: planning, organizing, financing, marketing, and controlling the smaller enterprise. Team research project. (Fall and spring)

193 New Venture Tactical Planning (3) Toftoy, Carayannis

Development of a comprehensive business plan based on a feasibility study. Prerequisite: Mgt 192. (Fall)

194 Product Development and Venturing (3) Toftoy, Carayannis

Students form entrepreneur teams to develop new products. Prerequisite: Mgt 192 or permission of instructor. (Spring)

199 Independent Study (3)

Staff

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. (Fall, spring, and summer)

MARKETING

Professors S.F. Divita, R.F. Dyer, P.A. Rau, R.S. Achrol, L.M. Maddox, S.S. Hassan (*Chair*)

Associate Professors M.L. Liebrezn-Himes, A.K. Smith

Assistant Professor V. Perry

See the School of Business for programs of study leading to the degree of Bachelor of Business Administration.

Departmental prerequisite: BAdm 110 is prerequisite to all courses in the Marketing Department.

142 Consumer Behavior (3)

Perry and Staff

Social, cultural, and psychological factors influencing the behavior of consumers. Models of buyer behavior, consumption patterns, market segmentation, attitude formation and change, brand loyalty, adoption of innovations, and store choice decisions. Marketing management and public policy implications of consumer research. (Fall and spring)

143 Marketing Research (3)

Rau and Staff

Basic methods and techniques of market research. Designing a marketing research project: research questions, secondary and syndicated data, primary data collection approaches, data analysis and report presentation. Focus group interviews, questionnaire

construction, statistical software packages. Prerequisite: BAdm 54, Stat 51. (Fall and spring)

148 **Advertising (3)** Maddox

Planning an advertising campaign. Consumer and market information, message appeals, media selection and scheduling, measuring effectiveness. Current criticism and regulation of the advertising function. Other major marketing communication tools, including personal selling and sales promotion. Prerequisite: Mktg 142. (Fall)

149 **Advanced Advertising Campaigns (3)** Maddox

Participation in the National Student Advertising Competition. Research, media planning, copywriting, layout/design. Travel to competition site. Prerequisite: BAdm 110 and permission of instructor; corequisite: Mktg 199. (Spring)

150 **Salesmanship and Sales Management (3)** Staff

Development of personal selling and presentation skills; examination of types of selling situations. Organization of sales department, sales planning and forecasting, quotas, territories, performance standards, and analysis and control of distribution costs. (Fall and spring)

152 **Retailing Management (3)** Staff

A study of retailing management and strategy covering the current environment of retailing, retail market and financial analysis, store location and design, inventory management, and non-store and service retailing. Industry executive and student presentations and case analyses. (Fall)

159 **Marketing: Strategic Planning (3)** Dyer, Liebrezn-Himes, Rau

The capstone course for marketing majors. Analytical integration of material covered in previous marketing courses. Marketing strategy literature, financial dimensions of marketing decisions, and comprehensive cases. Prerequisite: Mktg 142, 143, 148 or 150, and one additional marketing major field course. (Fall and spring)

190 **Special Topics (3)**

Staff

Experimental offering: new course topics and teaching methods.

199 **Independent Study (arr.)**

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. (Fall and spring)

MATHEMATICS

Professors H.D. Junghenn, I.I. Glick, M.M. Gupta, E.A. Robinson, F.E. Baginski, D.H. Ullman

(*Chair*), J. Przytycki, J. Bonin, V. Harizanov

Associate Professors M. Moses, Y. Rong, W. Schmitt

Assistant Professors L. Abrams, Y. Taylor, I. Yi, K. Gurski, A. Shumakovitch

Bachelor of Arts with a major in mathematics—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Math 21 or 31, and Math 32 and 33.
3. Required courses in the major—a minimum of 27 additional credit hours of approved 100-level courses in mathematics, including Math 121, 124, 139, 140, and either Math 122 or 125.

Bachelor of Science with a major in applied mathematics—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Math 21 or 31, and Math 32 and 33.

3. Required courses in the major—a minimum of 27 additional credit hours of approved 100-level courses in mathematics, including Math 124, 139, 142, 143, and either Math 153 or 157.

4. Required courses in a related area—12 additional credit hours, to be selected in consultation with a departmental advisor, from a related area such as statistics, computer science, physics, engineering, chemistry, biology, economics, or applied science. At least 6 of these hours must be chosen from courses at the 100 level or higher.

Special Honors—To graduate with Special Honors, a student must meet the general requirements stated under University Regulations; maintain a grade-point average of at least 3.5 in mathematics courses; enroll in 3 credit hours of Math 195 in addition to the 27 credit hours of required courses in the major; and present an oral defense of a senior thesis prepared for Math 195.

Minor in mathematics—18 hours in mathematics courses, of which at least 12 are at the 100 level or higher, chosen in consultation with a departmental advisor.

With permission, graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

Note: Math 21, 31, and 52 are related in their subject matter, and credit for only one of the three may be applied toward a degree. Some courses require a placement examination in lieu of a course prerequisite. This examination is offered by arrangement with the Department of Mathematics.

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| 3 | College Algebra (3) | Staff |
| | Equations and inequalities, functions and graphs, polynomial and rational functions, exponential and logarithmic functions, systems of equations. | |
| 7 | Mathematics and Politics (3) | Staff |

A mathematical treatment of fair representation, voting systems, power, and conflict. The impossibility theorems of Balinsky and Young and of Arrow. The electoral college. The prisoner's dilemma.

9 **Mathematical Ideas I** (3) Staff

Mathematics of social choice. Scaling and fractals. Chaos and symmetry.

10 **Mathematical Ideas II** (3) Staff

Elementary graph theory, scheduling. Probability theory.

20–21 **Calculus with Precalculus I–II** (3–3) Staff

An introduction to single-variable calculus (differentiation and integration of algebraic and trigonometric functions with applications), with the concepts and techniques of precalculus developed as needed. Prerequisite to Math 20: Math 3 or the placement examination or a score of 560 or above on the SAT II in mathematics; Math 20 is prerequisite to Math 21.

31 **Single-Variable Calculus I** (3) Staff

Limits and continuity. Differentiation and integration of algebraic and trigonometric functions with applications. Prerequisite: the placement examination or a score of 720 or above on the SAT II in mathematics.

32 **Single-Variable Calculus II** (3) Staff

The calculus of exponential and logarithmic functions. L'Hopital's rule. Techniques of integration. Infinite series and Taylor series. Polar coordinates. Prerequisite: Math 21 or 31.

33 **Multivariable Calculus** (3) Staff

Partial derivatives and multiple integrals. Vector-valued functions. Topics in vector calculus, including line and surface integrals and the theorems of Gauss, Green, and Stokes. Prerequisite: Math 32.

- 51
- Finite Mathematics for the Social and Management Sciences (3)**
- Staff

Systems of linear equations, matrix algebra, linear programming, probability theory, and mathematics of finance. Prerequisite: Math 3 or the placement examination or a score of 560 or above on the SAT II in mathematics.

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- 52 **Calculus for the Social and Management Sciences (3)**
Staff

Differential and integral calculus of functions of one variable; applications to business and economics. Prerequisite: Math 3 or the placement examination or a score of 560 or above on the SAT II in mathematics.

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| 91 | Introductory Special Topics (1 to 3) | Staff |
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Admission by permission of instructor. May be repeated for credit.

- 101
- Introduction to Mathematical Logic (3)**
- Harizanov, Moses

Symbolic logic as a precise formalization of deductive thought. Logical correctness of reasoning. Formal languages, interpretations, and truth. Propositional logic and first-order quantifier logic suited to deductions encountered in mathematics. Prerequisite: Math 32 or permission of instructor.

- 102
- Axiomatic Set Theory (3)**
- Harizanov, Moses

Cantor's theory of sets. Russell's paradox. Axiomatization of set theory as a framework for a contradiction-free mathematics. Finite, countable, and uncountable sets; ordinal and cardinal numbers; the axiom of choice. Prerequisite: Math 32 or permission of instructor.

- 103
- Computability Theory (3)**
- Harizanov, Moses

The unlimited register machine as a model of an idealized computer. Computable functions, Church's thesis. Effective enumerability. Unsolvability of the halting problem and other theoretical limitations on what computers can do. Prerequisite: Math 32 or permission of instructor.

106 **Introduction to Topology (3)** Rong, Taylor

Metric spaces: completeness, compactness, continuity. Topological spaces: continuity, bases, subbases, separation axioms, compactness, local compactness, connectedness, product and quotient spaces. Prerequisite: Math 33 and 124 or permission of instructor.

113 **Introduction to Combinatorics (3)** Bonin, Ullman, Schmitt

Introduction to combinatorial enumeration and partially ordered sets. Basic counting techniques, inclusion–exclusion principle, recurrence relations, generating functions, pigeonhole principle, bijective correspondences, and applications to computer science, optimization, and coding theory. Prerequisite: Math 32.

120 **Elementary Number Theory (3)** Bonin, Robinson

Divisibility of integers, prime numbers, greatest common divisor, the Euclidean algorithm, congruence, the Chinese remainder theorem, number theoretic functions, Möbius inversion, Euler's phi function, primitive roots and indices, and applications to cryptography and primality testing. Prerequisite: Math 31.

121 **Introduction to Abstract Algebra (3)** Abrams, Schmitt

Study of groups and associated concepts, including Lagrange's theorem, Cayley's theorem, the fundamental theorem of homomorphisms, and applications to counting. Prerequisite: Math 32 and 124 or permission of instructor.

122 **Introduction to Abstract Algebra II (3)** Abrams, Schmitt

Study of rings, through maximal and prime ideals, and the study of fields, through Galois theory. Prerequisite: Math 121.

124 **Linear Algebra I** (3) Robinson, Ullman

Linear equations, matrices, inverses, and determinants. Vector spaces, rank, eigenvalues, and diagonalization. Applications to geometry and ordinary differential equations.

Prerequisite: Math 21 or 31, or 51 and 52, or permission of instructor.

125 **Linear Algebra II** (3) Abrams, Yi

Theory of vector spaces, linear transformations, and matrices. Quadratic and bilinear forms. Characteristic polynomials and the Cayley–Hamilton theorem. Similarity and Jordan canonical form. Prerequisite: Math 124.

132 **Introduction to Graph Theory** (3) Bonin, Ullman

Fundamental concepts, techniques, and results of graph theory, including applications to operations research, computer science, chemistry, and the social sciences. Topics include trees, connectivity, traversability, matchings, coverings, colorability, planarity, networks, and Polya enumeration. Prerequisite: Math 21 or 31.

135 **Projective Geometry** (3) Bonin

Projective spaces, projectivities, conics, pairs and pencils of conics, finite planes, coordinates, collineation, Desarguesian planes. Prerequisite: Math 120 or 121 or permission of the instructor.

139 **Advanced Calculus I** (3) Junghenn, Ullman

A rigorous study of differentiation, integration, and convergence. Topics include sequences and series, continuity and differentiability of real-valued functions of a real

variable, the Riemann integral, sequences of functions, and power series. Prerequisite: Math 33 and 124 or permission of instructor.

140 **Advanced Calculus II (3)** Junghenn, Ullman

Continuation of Math 139. Topics include: topology of \mathbb{R}^n , derivatives of functions of several variables, inverse and implicit function theorems, multiple integrals, generalized Stokes's theorem. Prerequisite: Math 139 or permission of instructor.

142 **Ordinary Differential Equations (3)** Gupta, Gurski

A first course in ordinary differential equations with an emphasis on mathematical modeling: solution curves, direction fields, existence and uniqueness, approximate solutions, first and second order linear equations, linear systems, phase portraits, and Laplace transforms. Prerequisite: Math 32 and 124 or permission of instructor.

143 **Partial Differential Equations (3)** Baginski, Gurski

A first course in partial differential equations: Fourier series and separation of variables, vibrations of a string, Sturm–Liouville problems, series solutions, Bessel's equation, linear partial differential equations, wave and heat equations, separation of variables. Prerequisite: Math 33 and 124 or permission of instructor.

148 **Differential Geometry (3)** Baginski, Robinson, Taylor

Curves in space, regular surfaces, tensors, fundamental forms of a surface. Gauss–Bonnet theory, minimal surfaces. The geometry of the Gauss map. Prerequisite: Math 33 and 124 or permission of instructor.

153 **Introduction to Numerical Analysis (3)** Baginski, Gupta

Accuracy and precision. Linear systems and matrices. Direct and iterative methods for solution of linear equations. Sparse matrices. Solution of nonlinear equations.

Interpolation and approximate representation of functions, splines. Prerequisite: Math 33 or 124 and some knowledge of computer programming.

157 Introduction to Complex Variables (3) Glick, Junghenn

Analytic functions and power series. Contour integration and the calculus of residues.

Conformal mapping. Physical applications. Prerequisite: Math 33 and 124 or permission of instructor.

170 Computational Complexity (3) Harizanov, Moses

Deterministic and nondeterministic Turing machines. Partial recursive functions and the Church–Turing thesis. Undecidable problems. Space and time complexity measures. Gap, speed-up, and union theorems. Decidable but intractable problems. The traveling salesman problem and other NP-complete problems. Prerequisite: Math 32 or permission of instructor.

181 Seminar: Topics in Mathematics (3) Robinson and Staff

Each offering of this course focuses on a particular aspect of mathematics. Past topics have included computational mathematics, fractals; network flows and combinatorial optimization; information theory and coding theory; dynamical systems; queuing theory. May be repeated for credit with permission. Prerequisite: Math 33 and 124 or permission of instructor.

191 Special Topics (arr.)

Admission by permission of instructor. May be repeated for credit.

195 Reading and Research (arr.)

Under the personal direction of an instructor. Limited to mathematics and applied mathematics majors with demonstrated capability. Prior approval of instructor required.

May be repeated for credit.

MECHANICAL AND AEROSPACE ENGINEERING

Professors M.K. Myers (*Chair*), R.E. Kaufman, C.M. Gilmore, J.L. Whitesides, C.A. Garriss,

J.D.-Y. Lee, T. Tong, P.A. Cooper (*Research*), Y.-L. Shen, A.D. Cutler

Associate Professor R. Mittal

Assistant Professors D.F. Chichka, R.R. Vallance, K.-J. Lu

Adjunct Professors B.W. Hannah, P. Matic, B. Whang

Professorial Lecturers J.A. Sprague, C.R. Hauer, S.M. Joshi, J. Juang, I. Raju, J.W. Edwards,

G.C. Everstine, A.R. Johnson, J. Sobieski, E.L. Marsh, R.C. Blanchard

Associate Professorial Lecturers T.K. O'Brien, A. Auslander, J.K. Soldner, S.S. Dodbele, J.H.

Milgram

Assistant Professorial Lecturer M.A. Busby

See the School of Engineering and Applied Science for the programs of study leading to the Bachelor of Science with a major in mechanical engineering.

1–2 Introduction to Mechanical and Aerospace Engineering (1–1) Staff

Careers in mechanical and aerospace engineering and the necessary academic program.

Teamworking and problem-solving skills for solution of design problems. Analytical and design problems and correlations between academic skills and the mechanical and aerospace engineering professions. Participation in student competitions. (Academic year)

4 Engineering Drawing and Computer Graphics (3) Shen

Introduction to technical drawing, including use of instruments, lettering, geometric construction, sketching, orthographic projection, section and auxiliary views, dimensioning, pictorial drawing, and intersections and developments. Introduction to computer graphics, including topics covered in manual drawing, and computer-aided drafting. (Fall and spring)

117 Engineering Computations (3) Staff

Numerical methods for engineering applications. Methods for solving systems of linear equations, root finding, curve fitting, and data approximation. Numerical differentiation and integration and numerical solution of differential equations. Computer applications. Prerequisite: CSci 49 or 50. (Spring)

120 Methods of Engineering Experimentation (2) Staff

Acquisition and analysis of experimental data. Laws of modeling and simulation. Report formulation and presentation. Basic principles of measuring instruments and sensors. Fundamentals of digital data acquisition and use of computer-based data systems. Strain gages, oscilloscopes, transducers, and computerized data systems. Prerequisite: MAE 117. (Spring)

126 Fluid Mechanics (3) Garris, Shames

Fluid properties, fluid statics, integral and differential formulations of conservation of mass, momentum, and energy. Bernoulli's equation. Dimensional analysis and similitude. Inviscid flow. Viscous flow. Experimental and computational methods in fluid mechanics. Prerequisite: ApSc 58. (Fall)

128 Biomechanics I (3) Staff

Mechanical analysis of biological systems. Characterization of living tissue. Applications of statics, solid mechanics, kinematics, and elementary dynamics to the human musculoskeletal system. May be taken for graduate credit with approval of department.

Prerequisite: ApSc 57, CE 120. (Spring)

129 **Biomechanics II (3)** Staff

Mechanical analysis of physiological fluid dynamics. Application of fluid flow analysis techniques to cardiovascular, pulmonary, respiratory, and phonatory flows. Introduction to biomedical devices that manipulate physiological flows. May be taken for graduate credit with approval of department. Prerequisite: MAE 128. (Spring)

131 **Thermodynamics (3)** Staff

Fundamentals of equilibrium thermodynamics; Zeroth, First, and Second Laws. Work, heat, internal energy, enthalpy, thermodynamic potential functions; heat transfer mechanisms, phase diagrams, equations of state and property tables, power systems, refrigeration, heat pump systems. Reversible and irreversible processes, Carnot cycle, entropy, exergy. Prerequisite: Phys 21. (Spring)

134 **Introduction to Vibration Analysis (3)** Garriss, Lee

Natural frequencies, free vibration, forced vibration. Unbalance, whirling, vibration isolation. Measuring techniques and application of computers in vibration analysis. Multiple degrees of freedom. Dynamic vibration absorbers. Shock and transient vibration. Prerequisite: ApSc 58. (Spring)

145 **Orbital Mechanics and Spacecraft Dynamics (3)** Chichka

Coordinate systems and transformations, rocket equation, two-body problem, orbit transfers, orbit perturbations, attitude dynamics and stability of symmetric spacecraft, environmental and control torques. (Fall)

149 **Thermal Systems Design (3)** Staff

Completion of a thermal systems design project that requires integration of engineering science, economics, reliability, safety, ethics, professional responsibility, and social considerations. Development and use of design methodology, optimization, feasibility considerations, detailed system descriptions, and presentation of results. Prerequisite: MAE 187. (Fall)

152 **Mechanical Engineering Laboratory (2)** Garriss and Staff

Project-oriented course. Simulates working environment of professional engineers. Projects are assigned in student's areas of interest; student is expected to design and assemble own experiments. Extensive use of instrumentation and computing facilities. Project proposal, progress reports, final report, and periodic oral presentations required. Prerequisite: MAE 120. (Spring)

155 **Aerodynamics (3)** Myers, Garriss

Subsonic and supersonic aerodynamics: potential flow, lift and form drag, viscous effects, compressible flow. Prerequisite: MAE 126. (Spring)

157 **Aerodynamics Laboratory (1)** Staff

Subsonic and supersonic wind tunnel experiments and simulations. (Fall)

162 **Aerospace Structures (3)** Staff

Basic structural theory of lightweight aerospace structures. Development of shear and bending moment diagrams and stresses. Analysis of typical monocoque structures.

External airloads and their distribution. Mechanical properties of metal and advanced composite structures. Design of members in tension, bending or torsion, and design of webs in shear. (Spring)

163 **Airplane Performance (3)** Staff

Lift and drag estimation methods. Airplane performance measures, such as range and endurance, turning flight, specific excess power and acceleration, takeoff and landing performance. Longitudinal and lateral-direction static and dynamic stability. Control surface effectiveness. (Fall)

166 **Materials Engineering (2)** Gilmore, Haque

Mechanical properties, plastic deformation dislocation theory, yielding, strengthening mechanisms, microstructure and properties, heat treatment of steel, composites, amorphous materials, viscoelastic deformation, creep, fracture, fatigue, fatigue crack propagation. Prerequisite or concurrent registration: ApSc 130. Same as CE 166. (Fall)

167 **Mechanics of Materials Laboratory (1)** Gilmore, Haque

Measurement of strains and study of failure resulting from applied forces in ductile, brittle, anisotropic, elastomeric, plastic, and composite materials. Study of tension, compression, bending, impact, and shear failures. Prerequisite or concurrent registration: MAE 166. Same as CE 167. (Fall)

170 **History and Impact of the U.S. Patent System (3)** Garriss

Economic systems and emergence of the free market; role of the patent system in the industrial development of the United States; constitutional foundations; evolution of the U.S. patent system; landmark litigation; impact on future innovation; international aspects; the likely future of the patent system. (Spring)

171 **Patent Law for Engineers (3)** Staff

Types of patents; international patents; inventorship; prosecution process; basic references for patents; detailed structure of a patent; patentability requirements; reexamination and reissue; litigation; infringement and invalidity; copyrights, trademarks, and trade dress. May be taken for graduate credit with approval of department. (Fall)

172 **Engineering Design and the Patent System (3)** Staff

Design experience in group projects involving following precisely the teachings of a licensed patent; or avoiding infringement of a provided patent while offering a competitive alternative; or evaluating a provided patent in light of prior art or by attempting to design a competitive product. May be taken for graduate credit with approval of department. Prerequisite: MAE 171 and senior status. (Fall)

182 **Electromechanical Control System Design (3)** Lee

Application of control theory to the design of electromechanical systems. Transducers, valves, and other control components. Mathematical models of open- and closed-loop electromechanical systems. Root locus and frequency response methods; application to the synthesis of feedback systems by both manual and computer-aided techniques. Prerequisite: MAE 117, 134. (Fall)

187 **Heat Transfer (3)** Staff

Steady- and unsteady-state heat conduction problems. Analytical and numerical solution methods. Convective heat transfer, boundary-layer approach, analogy between heat and momentum transfer. Thermal radiation; fundamental concepts and laws. Heat-exchanger design. Prerequisite: MAE 126, 131. (Spring)

190 **Analysis and Synthesis of Mechanisms (3)** Kaufman and Staff

Kinematics and dynamics of mechanisms. Displacements, velocities, and accelerations in linkage, cam, and gear systems by analytical, graphical, and computer methods. Synthesis of linkages to meet prescribed performance requirements. Prerequisite: ApSc 58. (Fall)

191 **Mechanical Design (3)** Kaufman and Staff

Integration of knowledge of strength of materials in a design context. Stresses and deflections in engineering structures. Theories of failure. Introduction to the design of mechanical components, such as fasteners, shafts, springs. Introduction to the use of computers in mechanical engineering design. Prerequisite: CE 120, MAE 117. (Spring)

192 **Manufacturing Processes and Systems (3)** Shen and Staff

Introduction to manufacturing techniques for metals, polymers, ceramics, and composites. Relationships between properties of materials and techniques for processing them. Process selection, design, control, and integration. Computer-integrated manufacturing, robotics and assembly automation. Prerequisite: junior status or permission of instructor. (Fall)

193 **Engineering Systems Design (3)** Kaufman and Staff

Creative engineering design, problem definition, and concept generation. Design of journal and roller element bearings, fasteners and permanent joints, and springs. Design project incorporating design selection, and optimization. Project presentation using graphical and computer resources. Prerequisite: MAE 191. (Fall)

195 **Computer-Aided Engineering of Mechanical Systems (3)** Staff

Presentation of the major elements of computer-aided engineering systems: interactive computer graphics, finite element analysis, and design optimization. Consideration of

economics, safety, and reliability factors. Prerequisite: MAE 193; concurrent registration: MAE 196. (Spring)

196 Computer-Aided Engineering Laboratory (1) Staff

Instruction and hands-on applications of computer-aided engineering systems to the design, analysis, and optimization of mechanical engineering components and systems.

Concurrent registration: MAE 195. (Spring)

197 Robotic Systems Design and Applications (3) Staff

Modeling and analysis of robot designs. Kinematics, statics, and dynamics of linkages.

Design and selection of mechanical structures, actuators, transmissions, and sensors.

Design of robotic control systems. Relevant computer hardware and software. Industrial applications and limitations of robot systems. Lab experiments. Same as ECE 192.

Prerequisite: MAE 182. (Spring)

198 Research (1 to 3) Staff

Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status. (Fall and spring)

199 Student Design Project (1 to 3) Staff

Special student projects involving extensive design of various mechanical engineering systems. Examples include the solar car, mini-Baja, or other design competitions that typically are national in scope. May be taken for graduate credit by graduate students. (As arranged)

MEDIA AND PUBLIC AFFAIRS

Professors C.H. Sterling, J.B. Manheim, J.L. Folkerts, C. Stern, S.V. Roberts, S. Hess

(Research), R.M. Entman

Associate Professors J.E. Thiel, J.E. Steele, S.L. Livingston (*Interim Director*), L.S. Harvey,

A.L. May III, L. Willnat, M. Feldstein, P.F. Phalen

Assistant Professors S. Keller, S. Aday, K.A. Gross

Associate Professorial Lecturers J.A. Echave, M.C. McAllister

Assistant Professorial Lecturers R. Russell, J.M. Shanahan

Through the Columbian College of Arts and Sciences, the School of Media and Public Affairs offers programs of study leading to the Bachelor of Arts with majors in journalism and mass communication and in political communication. Entering freshmen may be admitted to degree programs within SMPA through a competitive application process as specified in application materials distributed by the Office of Admissions.

In addition, a limited number of students will be admitted through a competitive application process that begins after the student is accepted to the University. Students are encouraged to apply during the first semester of their sophomore year; applications are not accepted from students with more than 75 credit hours. Minimum requirements for admission include the completion of prerequisites with specified grades for each program and a minimum GPA of 3.0, though achievement of the minimum GPA does not guarantee admission. Once admitted to the University, students desiring to enter an SMPA major face a highly selective process. Contact SMPA for specific information and applications; program application requirements vary and in some cases include achieving specific grades in certain courses and completion of an essay. Programs are listed below with their course offerings.

All students, both those admitted directly into SMPA and those applying after acceptance to GW, must achieve specified grades in some courses. Check with SMPA for particular grade requirements and course sequencing.

Bachelor of Arts with a major in journalism and mass communication—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Required courses in related areas—AmSt 71–72 or Hist 71–72; PSc 2; Stat 53; one course chosen from Econ 11 or PSc 1 or 3.
3. The SMPA core—SMPA 51, 101, 102, 110 (which requires a minimum grade of *B* to apply for or remain in the major), 112, and 199.
4. Required courses in the major—SMPA 111 and either 173 or 177; four courses chosen from SMPA 130–143, 145, 146, 179, and 197; four courses chosen from SMPA 120, 128, 144, 159–178, 195, and 196.

Bachelor of Arts with a major in political communication—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Required courses in related areas—AmSt 71–72 or Hist 71–72; PSc 2 and either 1 or 3; Stat 53.
3. The SMPA core—SMPA 51, 101, 102 (which requires a minimum grade of *C* to apply for or remain in the major), 110, 112, and 199.
4. Required courses in the major—SMPA 120; two 100-level PSc courses; seven courses chosen from SMPA 141, 145, 150–173, 178, 194, 196, and 197.

Five-Year Bachelor of Arts in an SMPA major and Master of Professional Studies in the field of political management—Interested students should consult their program director and apply to the joint degree program during the second semester of their junior year.

Special Honors in journalism and mass communication—Students with a 3.5 GPA in all courses completed at GW and in all courses required for the major may apply for Special Honors in journalism and mass communication. A student intending to apply must consult with the program director at the start of the senior year. Application must be made by the mid-point of the student's final semester (October 15 or March 15) and must include a letter of application and a portfolio of published or broadcast work. The work will be evaluated by the journalism and mass communication faculty on the basis of professional standards as outlined by the program director.

Special Honors in political communication—Students with a 3.7 GPA in all courses completed at GW and in all courses required for the major may declare for Special Honors in political communication at the beginning of the senior year. Students take SMPA 196 in the first semester of the senior year and SMPA 199 in the second semester. To achieve Special Honors, the student must maintain the required GPA and present a successful oral defense of a research paper prepared for the Senior Seminar before a committee that includes the seminar instructor and two other faculty members nominated by the student and approved by the seminar instructor.

Minor in journalism and mass communication—Required: 18 credit hours, including SMPA 50 and 110; 6 credits chosen from 130–146; and 6 credits from 169–179, 195, 197.

50 **Media in a Free Society (3)**

Staff

The role of mass communication in democratic political systems: informational requirements of democracy, sources of political information and the role of news media and other channels in creating and disseminating it; issues relating to propaganda and public information; and the interaction between information flows and democratic political culture. Not open to SMPA majors.

- 51 **Research Methods (3)** Aday, Manheim, Willnat, and Staff
- Processes of inquiry within mediated communication. The concepts of framing research questions, conducting literature reviews, developing a research design, and interpreting results of cultural and social science research within a societal framework. Prerequisite: Stat 53.
- 101 **Journalism and Mass Communication Theory and Practice (3)** Steele and Staff
- An overview of journalism and mass communication in the United States. Organizations and institutions of print and electronic news media; the social context of journalism; how news is constructed; and intellectual underpinnings of occupational ideals and professional practices that guide journalism. Open only to SMPA majors.
- 102 **Introduction to Political Communication (3)** Gross and Staff
- Basic concepts and theories of political communication; development of a framework for analyzing political communication; applications in the United States, other countries, and the international system. Open only to SMPA majors.
- 110 **Introduction to News Writing and Reporting (3)** Staff
- Fundamentals of news reporting and writing, with emphasis on the print media. News judgment, information gathering skills, and crafting news and feature stories. Regular in-class and outside reporting and writing exercises. Directly admitted freshmen may enroll in their second semester; all other freshmen need departmental permission. Laboratory fee, \$100.
- 111 **Advanced News Reporting (3)** May
- Reporting, writing, and computer skills for covering beats and developing in-depth news stories. Techniques in researching, observing, and interviewing to frame stories of public

interest; outside and in-class reporting and writing assignments. Restricted to Journalism and Mass Communication majors or permission of instructor required. Prerequisite: SMPA 110. Laboratory fee, \$100.

112 **Introduction to Digital Media Production (3)** Staff

Basic introduction to digital media production, including web design and video shooting/editing, with emphasis on use in journalism and political communication. Laboratory fee, \$75.

120 **Public Opinion (3)** Gross

Key aspects of the literature on public opinion, with emphasis on the role of media in opinion formation and change. Topics include the meaning of public opinion in a democratic society, a review of methods used to measure opinions, and media effects on opinion.

128 **Media, Politics, and Government (3)** Roberts

Exploration of the role played by communication, principally through the mass media, in the conduct of government and the making of public policy. Same as PSc 128.

130 **Computer-Assisted Reporting (3)** Staff

Retrieving information from online sources and government databases, with emphasis on the ethical use and evaluation of data. Use of computer databases to analyze records and produce reliable and valid data for investigative news stories. Prerequisite: SMPA 110. Laboratory fee, \$75.

131 **News Online (3)** Staff

The examination and practice of journalism on the Internet with an emphasis on news writing and presentation, including web page design. News standards, approaches to

online writing, ethics, and issues of access on the web. Production techniques.

Prerequisite: SMPA 110. Laboratory fee, \$75.

132 **Web Magazine Practicum (6)** Staff

For SMPA majors in the senior year. Students report, write, and edit online GW student news magazine. Prerequisite: SMPA 110. Laboratory fee, \$75.

133 **Photojournalism (3)** Staff

Elements of effective news and feature photos, including study and evaluation of slides taken by students. Picture selection, cropping, captions. Student costs include film and developing. Laboratory fee, \$75.

134 **Publication Design (3)** Staff

Design, editing, layout, and photo selection for newspapers and magazines. Selecting and editing stories; writing headlines and photo captions; sizing and cropping graphic materials; laying out pages. Ethics of editing. Student costs include film and developing.

135 **Broadcast News Writing (3)** Feldstein

Introduction to writing television news scripts based on actual events. Using workshop techniques, scripts are evaluated for content, structure, and use of words, pictures, and sound. Extensive writing and rewriting using streaming video from professional newscasts. Prerequisite: SMPA 110.

136 **Broadcast News Reporting (3)** Staff

Advanced techniques in television news reporting and editing. Students produce, shoot, and edit news packages by teaming up to report in the field. Prerequisite: SMPA 110.

137 **Broadcast News Studio Production (3)** Staff

Hands-on workshop designed to give simulated TV industry experience. Students work together to produce and direct a simulated broadcast news program. Recommended prerequisite: SMPA 135 or 136. Laboratory fee, \$75.

138 **Television Magazine (3)** Staff

Advanced techniques in writing, reporting, producing, and editing television news magazine packages. Prerequisite: SMPA 136. Laboratory fee, \$75.

139 **Television News Practicum (6)** Staff

For SMPA majors in the senior year. Students report, produce, direct, and edit GW student news broadcast. Prerequisite: SMPA 136. Laboratory fee, \$75.

140 **Washington Reporting (3)** May

Examination of reporting and writing techniques employed in news coverage of the national government, with an emphasis on serving a regional readership or audience. Using Washington as a laboratory, students focus on contemporary issues and news makers in the legislative and executive branches of government. Prerequisite: SMPA 110.

141 **Campaign Reporting (3)** May

Development of news gathering and writing skills needed for the coverage of political campaigns. Using in-class exercises and outside assignments, students acquire reporting and writing proficiency to illuminate how campaigns work and how politics affects the lives of citizens. Prerequisite: SMPA 110.

142 **Investigative Reporting (3)** Staff

Hands-on intensive training in reporting and writing in-depth enterprise news stories that expose hidden problems or wrong-doing. Prerequisite: SMPA 110.

143 **Feature Writing (3)** Roberts

Development and writing of a wide range of feature articles, including interviews, profiles, op-ed columns, and personal memoirs. Weekly writing assignments and practical experience, including marketing work to publications. Prerequisite: SMPA 110.

144 **Narrative Journalism (3)** Steele

The narrative or story-telling tradition in journalism. Students experiment with narrative techniques in a series of written exercises and a final project. Enrollment limited to 15 students with preference given to upper-class SMPA majors and graduate students.

145 **Editorial and Persuasive Writing (3)** Keller

Techniques of editorial and column writing; editorial page and public affairs programming; function of commentary in a free press. Prerequisite: SMPA 110.

146 **Specialized Reporting (3)** Staff

Advanced reporting in specialized fields, such as business, science, medicine. Topics and instructors vary each semester. Prerequisite: SMPA 110.

150 **Public Diplomacy (3)** Staff

The theory and practice of public diplomacy: informing, influencing, and establishing dialogue with international publics and institutions. A conceptual and historical examination of public diplomacy, current practices, and contemporary issues, including international information dissemination, educational and cultural exchange, and international broadcasting.

151 **Public Affairs and Government Information (3)** Staff

Aspects of information and public affairs functions of government agencies at all levels. Role of the information specialist. Writing and editing for government publications.

152 **Principles of Public Relations (3)** Staff

Principles, problems, ethics, and law of public relations for government, private concerns, educational and other public institutions.

153 **Strategic Political Communication (3)** Manheim

Origins of strategic approaches to political communications; techniques. Use of strategic communication by individuals, groups, organizations, and governments in both domestic politics and policymaking and in the international system. Prerequisite: SMPA 102 or permission of instructor.

154 **Political Campaign Communication (3)** Staff

Communication aspects of political campaigns for candidates and ballot issues. Examination of techniques and channels of communication, role of communication in campaign strategy, ethics and implications of campaign decision making.

155 **Campaign Advertising (3)** Keller

Introduction to the theory and practice of campaign advertising. Emphasis on televised political campaign spots, but a range of campaign advertising media are included: radio, direct mail, and the Internet.

156 **Political Debate (3)** Keller

Theory and practice of political debate. The campaign context, candidate strategies, debate issues, and debates and voter behavior. Participation in classroom debates.

157 **Political Speech Writing (3)** Keller

Theory and practice of public speaking in the context of mediated political communication. Students analyze, write, and give speeches.

158 **Strategic Practicum (3)** Manheim

Working in small groups, students research and develop full-scale plans for hypothetical, reality-based, strategic communication campaigns that test and apply theoretical advances in the field. Prerequisite: SMPA 153.

159 **Language and Politics** (3) Staff

Connections between language and the political world. Theory and practice of language in politics and the impact on the creation and consumption of politics.

160 **Race, Media, and Politics** (3) Gross and Staff

Examination of the place of race in American society and politics, with attention to the role of media reporting in helping to shape understanding of race and racial matters, public opinion about race, and race and electoral politics.

161 **Campaigns and Elections** (3) Staff

The role of the news media in campaigns and elections. Offered in even-numbered years.

162 **Information, Media, and National Security** (3) Gregory

he influence of information technologies and global trends on statecraft and military conflict; the increasing power of media (including the Internet) and non-state actors in global affairs; and how policymakers, diplomats, and military leaders shape communication strategies and adapt to the public dimension of national security in the post-9/11 world.

169 **International Communications** (3) Willnat

ajor international news-gathering and broadcasting organizations, international

communications policy forums, organizations and treaties, spectrum allocation criteria, communications technology, and trade in communication.

170 Comparative Media Systems (3)

Willnat

n-depth study of the developmental, regulatory, political, economic, and cultural dimensions of selected foreign communication systems.

171 Media in the Developing World (3)

Steele

Contemporary views of media roles in developing nations. The role of the press and electronic media in economic, social, and national development, including media as agents of modernization, development journalism, and post-colonial responses to Western “cultural imperialism.” Media and Islam; role of the Internet; and theories of media and globalization.

172 Media and Foreign Policy (3)

Livingston

The emerging role of news media in international affairs and diplomacy, particularly as it relates to U.S. foreign policy. Globalization of news media advances in instantaneous communications technologies; consequences for international diplomacy.

173 Media Law (3)

Staff

Freedom of the press, censorship, legislative controls, copyright, laws of libel and privacy, and laws relating to the news business, privilege, and fair comment.

174 Electronic Media Policy (3)

Sterling

Legal, technical, political, economic, and social aspects of radio, television, and cable and related delivery systems. Structure and operation of the FCC and other agencies; the

role of Congress and the courts. Spectrum allocation, behavioral regulation, the trend to deregulate political influence, and current policy issues.

175 **Media Management (3)** Staff

Decision making, strategic planning, and daily operations of all types of media organizations. Sales strategies, promotion, and research.

176 **Changing Media Technology (3)** Harvey

Examination of current and likely future trends in electronic media, with emerging emphasis on radio, television, and cable, including developments in technology, programming, and public policy and their cultural implications.

177 **Media History (3)** Feldstein, Steele, Sterling

American media from colonial times to the present, set against a backdrop of ongoing political, social, and economic developments. The development of press, radio, television, cable, satellite, and the Internet; government regulation and media relations; journalistic rights and responsibilities.

178 **Media Effects (3)** Phalen

The impact of broadcasting and related media on audiences; social science research findings and methods, including persuasion, formation of opinion, media and personal interaction, the depiction of violence, audience characteristics and media use patterns, and development of related theories and models of mass communication.

179 **Documentary (3)** Staff

Advanced techniques in writing, reporting, producing, and editing long-form television documentaries, including analysis of the techniques of propaganda and rhetoric used in

film and television to visualize political ideology. Laboratory fee, \$75. Prerequisite: SMPA 136.

194 **Selected Topics in Political Communication (3)** Staff

Topic announced in the Schedule of Classes. May be repeated if the topic differs, but may only count once toward the political communication major.

195 **Selected Topics in Journalism and Mass Communication (3)** Staff

Topic announced in the Schedule of Classes. May be repeated for credit if the topic differs.

196 **Independent Study (1 to 3)** Staff

tudents pursue a program of directed reading, research, and writing under the direction of a faculty advisor. Limited to seniors. In Political Communication, generally restricted to seniors pursuing Special Honors.

197 **Internship (1 to 3)** Staff

Students spend at least 5 hours per week per credit with an approved news organization, agency, or office under the general guidance of a faculty advisor. Guidelines are available in the SMPA office. May be taken *P/NP* only. Restricted to SMPA majors and minors in the junior and senior year. May be repeated for up to 6 credits.

199 **Senior Seminar (3)** Staff

Capstone course limited to SMPA majors.

MIDDLE EASTERN STUDIES

Program Committee: N. Brown (*Director*), D. Khoury, L. Riddle, W. Reich

The Elliott School of International Affairs offers a multidisciplinary program leading to a Bachelor of Arts with a major in the field of Middle Eastern Studies.

Bachelor of Arts with a major in Middle Eastern studies—The following requirements must be fulfilled:

1. The general curriculum requirements stated under the Elliott School of International Affairs, including Hmn 8 as the foundation course.
2. Required courses for the major—(a) 6 credit hours selected from Hist 107, 108, 114, 115, 158, 193, 194; (b) 6 hours selected from PSc 176, 177, 178, 179; (c) 6 hours selected from Rel 9, 107, 112, 115, 161, 163, 164, 165; (d) 3 hours selected from Econ 136, 151, 181–82; (e) 3 hours selected from Arab 103, 104; Clas 81, 82, 100, 101; and Hebr 104, 120–21; 6 additional hours of course work related to the Middle East from any department, to be selected in consultation with the program director.
3. Completion of third-year–level language study in Arabic (Arab 10) or Hebrew (Hebr 106).

Special Honors—In addition to the general requirements stated under University Regulations, a candidate for Special Honors in Middle Eastern studies must have attained a 3.4 grade-point average overall and complete either an Elliott School or Honors senior seminar, or an Honors senior thesis or a major independent study research project approved by the program director. Students must apply for honors candidacy prior to the beginning of the senior year.

Students should consult the program guidelines available from the Elliott School for courses pertinent to Middle Eastern studies. Courses in addition to those listed may be substituted with permission of the program director. Students should consult the program director concerning certain Special Topics or Selected Topics courses that may also be part of this program.

MUSIC

Professors R.J. Guenther, L. Youens (*Interim Chair*)

Associate Professor K. Ahlquist

Assistant Professors B. Fritz, M.W. Mehaffey, D. Boyce

Adjunct Professor K. Lornell

Adjunct Associate Professors M. Peris (*Piano*), R. Baker (*Voice*), R. Parnas (*Violin and Viola*),

C.J. Pickar, J.D. Levy (*Jazz Improvisation*), L. Barnet (*Cello*), J. Krash (*Chamber Music*)

Adjunct Assistant Professors J.E. White (*Voice*), J. Albertson (*Guitar*), F.B. Conlon (*Piano*), T.

Konstantinov (*Piano*), R. Birch (*Trumpet*), M. Findley (*Violin*)

Adjunct Instructors E. Guenther (*Pipe Organ*), B.R. Seidman (*Harp*), S. Wellman (*Voice*), P.

Edgar (*Percussion*), S.M. Fearing (*French Horn*), M. Von Villas (*Opera*), J.C. Connell

(*Percussion*), E. Waters (*Guitar*), L. Gilliam (*Recorder*), P. Fraize (*Jazz*

Performance/Saxophone), R. Couto (*Trumpet*), B. Dahlman (*Piano*), S. Brown (*Piano*), A.

Reiff (*Voice*), S. Stang-McCusker (*Flute*), R. Anstine Smith (*Harp*), L. Ferguson (*Clarinet*),

N. Snider (*Cello*), A. Mikolajewski (*Piano Accompanist*), M. Scarlett (*Voice*), G. Corella

(*Tuba*), D. Jones (*Clarinet*), R. Ocampo (*Voice*), D. Sciannella (*Trombone*), E. Drennen (*Jazz*

Violin), D. Lonkevich (*Flute*), P. Gajewski (*Orchestra*), D. Langan (*Voice*), C. Stabile-Libelo

(*Oboe*), A. Lucini (*Latin Percussion*), J. Koczela (*Bass*)

Assistant Professorial Lecturer S. Hilmy (*Electronic Studio*)

Lecturers J. Potter (*Mallet Percussion*), T. Williams (*Electric Bass*)

Bachelor of Arts with a major in music—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Mus 1, 2, 61 (or equivalent). Students must achieve grades of C or better in Mus 1 and 61 to declare the music major.

3. The language option listed under the General Curriculum Requirements of Columbian College.

4. Required courses in the major—Mus 101, 102, 105, 106, 126, 127, 139, 198; 4 credits of private applied music courses; 2 credits of music ensemble courses. In addition, 12 credits of music electives are required, at least 3 of which must be from a course numbered 162 and above. The distribution of these electives is as follows: history and literature (Mus 109, 110, 121, 122, 125, 175), 3 credits; theory and composition (Mus 70, 134, 135, 137, 161, 162, 174, 184), 3 credits; free electives in music, 6 credits. Because of the various options available in the B.A. program in music, students should consult with music faculty advisors at the earliest opportunity. All majors are expected to attend departmental lectures, master classes, and concerts, as appropriate.

5. Music majors are required to complete an approved independent project in their senior year, concurrently with registration in Mus 198. This project consists of a total of 2 to 6 credits, accumulated through registration for Mus 199 and/or any 100-level applied music course.

Special Honors in Music—To receive Special Honors in music, a student must meet the requirements stated under University Regulations and maintain a 3.5 grade-point average in music courses and at least a 3.0 average overall. The student must apply by the end of the junior year and complete the required senior independent project for at least 3 credits.

Minor in music—21 credit hours of music courses, consisting of Mus 1, 2, 61; 3 credits chosen from Mus 106, 126, 127; 3 credits chosen from Mus 105, 106, 109, 110, 121, 122, 125, 126, 127, 175; 3 credits of applied music study or ensemble; and 6 credits of music electives, two of which must be 100-level. All minors are expected to attend departmental lectures, master classes, and concerts, as appropriate.

Minor in jazz studies—23 credit hours of music courses, consisting of Mus 1, 2, 8, 10, 61, 70, 161; 4 hours of jazz performance techniques (Mus 59–60 or 159–60); and 2 hours of ensemble participation (Mus 52 or 55). All minors are expected to attend departmental lectures, master classes, and concerts, as appropriate.

MUSIC THEORY, COMPOSITION, HISTORY, AND LITERATURE

- | | | |
|---|---|-----------------|
| 1 | Elements of Music Theory (3) | Boyce |
| | Notation, scales, keys, intervals, terms, rhythms, and chord structure and progression. | |
| | Introduction to music literature, with emphasis on rudimentary aural analysis. (Fall and spring) | |
| 2 | Comprehensive Musicianship I (2) | Guenther |
| | Aural and keyboard skills development through dictation, sight singing, and performance and improvisation at the keyboard. Prerequisite: Mus 1, 61. | |
| | (Fall and spring) | |
| 3 | Music in the Western World (3) | Krash and Staff |
| | Introductory history of musical styles, related to listening; study of music materials and media. Not open to music majors. (Fall and spring) | |
| 4 | Topics in Music (3) | Staff |
| | A rotating set of classes; topics may include: American music, a composer, the opera, and musical life in Washington, D.C. (Spring) | |
| 7 | Music of the World (3) | Ahlquist |
| | Introduction to music in culture through comparative study of music from a variety of cultures worldwide. (Fall) | |
| 8 | History of Jazz (3) | Lornell |

Introduction to the styles, composers, and performers of jazz music from its origins to the present. (Spring)

10 **Comprehensive Musicianship for Jazz (2)** Levy

Aural and keyboard skills development through dictation, sight singing, and performance and improvisation at the keyboard, with emphasis given to skills associated with jazz performance. Prerequisite: Mus 2. (Fall)

70 **Introduction to Jazz Harmony (3)** Fraize

Analysis and composition of tunes in jazz/pop styles. Study of rhythmic characteristics, voice-leading, and chord/scale relationships within a jazz context. Prerequisite: Mus 2. (Spring)

101 **Harmony (3)** Boyce

Study of tonal harmonic practice from Baroque, Classical, Romantic, and 20th-century repertoires. Concurrent registration in the weekly keyboard lab is required. Prerequisite: Mus 2. (Spring)

102 **Comprehensive Musicianship II (2)** Boyce

Aural and keyboard skills development through dictation, sight singing, and performance and improvisation at the keyboard. Prerequisite: Mus 101.

105 **Introduction to Ethnomusicology (3)** Ahlquist, Lornell

Models of understanding music as a cultural endeavor. Application and critique of models in the design and execution of student independent field research. Prerequisite: Mus 1 or permission of instructor. (Spring)

106 **Music History III: 20th-Century Art Traditions (3)** Ahlquist

Western musical traditions and styles since Romanticism and approaches to music as art in contemporary society. Prerequisite: Mus 1.

109 **Orchestra Literature (3)** Guenther

History and styles of orchestra literature, analysis of representative works. Prerequisite: Mus 101 or permission of instructor.

110 **Chamber Music Literature (3)** Youens

History and styles of chamber music literature, analysis of representative works. Prerequisite: Mus 101 or permission of instructor.

121 **Opera (3)** Youens

History and styles of opera, analysis of representative works. Prerequisite: Mus 101 or equivalent.

122 **Music in the United States (3)** Ahlquist

History of music and musical life in the United States, emphasizing relationships among traditions of diverse origin. Prerequisite: Mus 1 or permission of instructor.

125 **Keyboard Music Literature (3)** Staff

History and styles of keyboard literature from the 16th century to the present. Prerequisite: Mus 101 or equivalent.

126 **Music History I: Antiquity through Early Baroque (3)** Youens

The development of Western European music from its earliest traceable roots to the end of the early, experimental Baroque period. Prerequisite: Mus 2 and sophomore standing.

127 **Music History II: The Tonal Era (3)** Youens

Styles, structures, social foundations and aesthetic change in European music of the late 17th through the late 19th centuries. Prerequisite: Mus 101.

- 134 **Composition (3)** Boyce
Introduction to 21st-century compositional practice; concepts of post-tonal analysis; emphasis on style studies and original student works. May be repeated for credit.
Prerequisite: Mus 101.
- 135 **Counterpoint (3)** Staff
Study and practice of 16th-century contrapuntal techniques.
- 137 **Orchestration (3)** Staff
Instrumental scoring. Prerequisite: Mus 101.
- 139 **Form and Analysis (3)** Guenther
Analysis of musical forms in representative musical literature. Prerequisite: Mus 101 or equivalent. (Fall)
- 151 **Conducting (3)** Fritz
Technique of conducting, score reading, rehearsal procedures, analysis, and interpretation of selected musical literature; practice in conducting. Prerequisite: Mus 101. (Fall, even years)
- 161–62 **Electronic and Computer Music (3–3)** Hilmy
Fundamental electronic and computer music concepts. Analog and digital sound synthesis techniques and theory, MIDI, studio recording techniques, signal processing, properties of sound, acoustics and psycho-acoustics, history and aesthetics. Laboratory fee: \$100 per semester. Mus 161 is prerequisite to Mus 162.
- 173 **Pedagogy (3)** Staff
Principles, materials, and methods of teaching in selected areas. Prerequisite: permission of instructor.

174 **Topics in Music Theory and Composition (3)** Staff

A seminar on variable topics in the discipline of music theory, analysis, and composition. Topics may include analysis of post-tonal music, advanced jazz arranging, analysis of 14th-century vocal music, developments in extended instrumental techniques since 1950. Prerequisites depend on the topic; consult the department.

175 **Topics in Music History and Literature (3)** Staff

A seminar on variable topics in music history and literature in all traditions and styles. Topics may include German musical Romanticism, introduction to critical musicology, the music of Josquin des Prez, and vernacular music in Washington, D.C. Prerequisites depend on the topic; consult the department.

184 **Advanced Composition (3)** Boyce

Private instruction in composition in tutorial format. Prerequisite: Mus 134.

198 **Senior Seminar (1)** Staff

Restricted to music majors in their final spring semester. Presentations of required senior projects in process; readings and discussion to place the projects in a broader musical and intellectual context. Corequisite: Mus 199.

199 **Independent Research (1 to 4)** Staff

Under the guidance of an assigned instructor. May be repeated for credit. Majors in their senior year take Mus 198 as a corequisite.

APPLIED MUSIC

Applied music courses are offered both fall and spring, and may be repeated for credit. For courses numbered 11 through 50 and 57 through 60, students may not register in the same semester for both the 1- and 2-credit course in the same instrument or in voice. Mus 51, 52, 53,

55, 56, and 153 do not include individual lessons and do not require a supplementary fee. Mus 61–62, 63, 64, 65, 66, 69, and 71, involving group study of beginning piano, voice, percussion, strings, and guitar, likewise do not require a supplementary fee. All other applied music courses include individual lessons and require a supplementary fee, as follows:

1. One-credit-hour courses: individual lessons of one-half hour a week, supplementary fee, \$125.
2. Two- or three-credit-hour courses: individual lessons of one hour a week, supplementary fee, \$250.

Supplementary fees for applied music courses are nonrefundable after the first two weeks of the fall and spring semesters. Consult the Music Department for details.

The supplementary fee is waived during the fall and spring semesters for full-time music majors and minors and for Presidential Arts Scholars in Music.

Departmental prerequisite: For Mus 11–12, Mus 61 or demonstration of adequate preparation. For Mus 15–16, level 2 piano proficiency or permission of instructor.

Required practice: a minimum of three hours a week for 1-credit courses and six hours a week for 2-credit courses.

11–12	Piano (1–2)	Staff
13–14	Voice (1–2)	Staff
15–16	Pipe Organ (1–2)	E. Guenther
17–18	Violin (1–2)	Parnas, Findley, Steiner
19–20	Classical Guitar (1–2)	Waters, Albertson
21–22	Viola (1–2)	Parnas, Findley
23–24	Cello (1–2)	Barnet, Snider

25–26	Bass (1–2)	Staff
27–28	Flute (1–2)	Stang-McCusker, Lonkevich
29–30	Recorder (1–2)	Gilliam
31–32	Oboe (1–2)	Staff
33–34	Clarinet (1–2)	Ferguson, Jones
35–36	Saxophone (1–2)	Fraize
37–38	Bassoon (1–2)	Staff
39–40	French Horn (1–2)	Fearing
41–42	Trumpet (1–2)	Birch
43–44	Trombone (1–2)	Sciannella
45–46	Percussion (1–2)	Edgar, Connell, Potter
47–48	Harp (1–2)	Seidman, Smith
49–50	Tuba (1–2)	Corella
51	University Symphony Orchestra (1)	Gajewski
	Preparation and performance of orchestral literature. Prerequisite: audition before director.	
52	Instrumental Ensemble (1)	Staff
	Chamber ensemble groups approved by audition. See the <i>Schedule of Classes</i> for complete listing: Section numbers are .10 flute choir, .11 guitar ensemble, .12 percussion ensemble, .13 jazz combo, .14 keyboard ensemble, .15 string ensemble, .16 woodwind ensemble, .17 brass ensemble, .18 Baroque ensemble, .19 Latin band, .20 blues revue.	
53	University Singers (1)	Staff
	Preparation and performance of choral literature. Prerequisite: audition before director.	

- 55 **Jazz Band (1)** Levy
Preparation and performance of classic and contemporary “big band” literature.
Prerequisite: audition before director.
- 56 **University Band (1)** Fritz, Birch
Section .10 is University Symphonic Band; Section .11 is University Wind Ensemble.
- 57–58 **Harpsichord (1–2)** Staff
- 59–60 **Jazz Performance Techniques (1–2)** Staff
See the *Schedule of Classes* for complete listing: Section numbers are .10 piano, .11 bass, .12 percussion, .13 guitar, .14 brass, .15 woodwind.
- 61–62 **Class Piano for Beginners (1–2)** Staff
Study of the rudiments of musical notation and piano playing in a small classroom setting; designed to take students who do not read music to a beginner’s level of proficiency. Prerequisite to Mus 62: Mus 61 or permission of the instructor. Open to all undergraduates.
- 63–64 **Class Voice for Beginners (1–2)** Staff
Study of the rudiments of musical notation and basic vocal technique in a small classroom setting. Open to all undergraduates.
- 65 **Class Percussion for Beginners (1)** Edgar
Basic musicianship and percussion performance skills on snare drum. Reading of standard musical notation and technical development of grips.
- 66–67 **Class Violin for Beginners (1–2)** Findley
Study of the rudiments of violin playing and musical notation in a small classroom setting; designed to take students who do not play the instrument to a beginner’s level of

proficiency. Prerequisite to Mus 67: Mus 66 or permission of the instructor. Open to all undergraduates.

69 **Class Orchestral Instrument for Beginners (1)** Staff

Study of basic instrumental technique and musical notation in a small classroom setting.

71	Class Guitar for Beginners (1)	Staff
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Study of the rudiments of guitar playing and musical notation in a small classroom setting. Open to all undergraduates.

81-82 **Lute** (1-2) Albertson

Departmental prerequisite: for applied music courses 111–160, approval of instructor and appropriate area coordinator.

Required practice: a minimum of four hours a week for 1-credit courses and eight hours a week for 2-credit courses.

111-12 **Piano** (1-2) Staff

113–14 **Voice** (1–2) Staff

115-16 **Pipe Organ** (1-2) E. Guenther117-18 **Orchestral Instrument** (1-2) Staff

119–20	Classical Guitar (1–2)	Albertson, Waters
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153 **Vocal Theater Workshop (1)** Von Villas, Conlon

A performance-oriented program. In the fall semester the stress is on development of body awareness for the stage, acting improvisations, and character development.

Scenes chosen from the opera, operetta, and musical theater repertoire. In the spring semester, musical coaching, use of makeup, and audition preparation is included.

157-158 **Harpsichord (1-2)** Staff

159–60 **Jazz Performance Techniques (1–2)** Staff

185 **Advanced Performance Study (3)** Staff

Private study in vocal or instrumental performance. Public performance and a minimum of 12 hours of practice per week are required. Prerequisite: audition before a faculty committee.

NAVAL SCIENCE

Professor P.J. Healey (Chair)

Associate Professor F. Stein

Assistant Professors L.L. Lazzari, B.W. Ward, J. Parks, J. Deichler, K. Meeuf

Naval Reserve Officers Training Corps Program

The Naval Reserve Officers Training Corps (NROTC) offers young men and women the opportunity to qualify for a full scholarship and a commission in the Navy or Marine Corps. NROTC midshipmen are required to complete the naval science courses and attend weekly professional seminars. During the summer, NROTC midshipmen participate in active duty at sea or shore-based training cruises for approximately four weeks. Upon receiving the baccalaureate and completing the NROTC program, qualified midshipmen are commissioned as ensigns in the Naval Reserve or second lieutenants in the Marine Corps Reserve. Commissioned naval officers go on to training in various warfare specialties and serve as surface or submarine officers, naval aviators, or SEALs. Marine Corps officers attend basic school in Quantico, Virginia, and serve in fields such as infantry, artillery, and aviation. Staff positions (intelligence, law, medicine) are not normally offered through NROTC. Students may join the NROTC through any one of the following programs.

Four-Year Scholarship Program—Students enter the NROTC Four-Year Scholarship Program through national competition and are appointed midshipmen in the Naval Reserve. While enrolled, a four-year-scholarship student receives government-provided tuition, fees, \$350 per semester for books, uniforms, and an allowance of up to \$400 per month. Upon graduation, students are commissioned with a four-year active duty service obligation. Scholarship Program students must include in their degree program courses in English, calculus, computer science, physics, national security policy, and naval science and participate in three summer training periods of approximately four weeks each.

Two-Year Scholarship Program—Selection for this program is made through national competition, based on the student's academic record, physical qualifications, and an interview. Application should be made by the middle of the fall semester of the student's sophomore year. Selected applicants attend six weeks of instruction at the Naval Science Institute (NSI) at Newport, Rhode Island, during the summer before their third academic year. At NSI, students take courses in naval science, physical fitness, and drill, similar to those required of four-year NROTC students during their freshman and sophomore years. Successful completion of the NSI program qualifies the two-year applicants for appointment as midshipmen in the Naval Reserve and enrollment in the NROTC Scholarship Program. Upon acceptance of this appointment, students receive all the benefits and assume all the obligations of midshipmen in the Four-Year Scholarship Program.

Entering freshmen and transfer students who are awarded NROTC scholarships and plan to live on campus may also be eligible for GW Residence Hall Awards from the University. NROTC scholars with prior experience in the Navy are eligible for awards covering the nominal charges for on-campus housing and meals. NROTC scholars who are new to the Navy and are

majoring in mathematics, chemistry, physics, or a program in the School of Engineering and Applied Science may receive up to \$4,000 to be applied toward the costs of on-campus housing and meals. Further information on these awards is available from the University Office of Admissions.

Four-Year College Program—Students are enrolled in a non-scholarship Four-Year College Program upon acceptance by the Department of Naval Science. Uniforms are provided, and during their junior and senior years, students receive up to \$400 per month. Students must include in their degree program courses in college algebra, science, and naval science and must attend the four-week at-sea training period between junior and senior year. Upon commissioning, College Program students serve a minimum of three years' active duty. Midshipmen who complete one term as College Program students, have a satisfactory academic record, and are physically qualified may compete for a scholarship awarded by the Chief of Naval Education and Training. If awarded, the scholarship will be for the remainder of the student's undergraduate enrollment, up to a maximum of three and a half years; service requirements and benefits are the same as for the scholarship programs.

Two-Year College Program—Application should be made by the middle of the fall semester of the student's second year. Selections are made through the Chief of Naval Education and Training, based on the student's academic record, physical qualifications, and an interview. Those students selected will attend the NSI and upon successful completion may enroll in the program. The benefits and obligations are the same as for the Four-Year College Program.

Requirements for all candidates—Qualifications for acceptable candidates for the Scholarship Program or the College Program include U.S. citizenship, fulfillment of physical requirements,

and willingness to participate in required summer training periods and to accept a commission in the Naval Reserve or Marine Corps Reserve when offered.

Enrollment in NROTC is not a requirement for taking naval science courses. Any student enrolled at George Washington University may take naval science courses with the approval of the Professor of Naval Science.

Degree Credit for Naval Science Courses

Columbian College of Arts and Sciences—NSc 126, 160, and 180 are acceptable as electives. Up to 12 credit hours (for NSc 52, 150, 175, and 176) may be accepted as professional electives in Columbian College.

School of Engineering and Applied Science—NSc 126 and 160 may be used for social science credit. Technical elective credit is acceptable as follows: for majors in civil engineering and mechanical engineering—NSc 52, 150, 175; for majors in electrical engineering—NSc 52 and 150; for majors in systems engineering—NSc 150, 151, 175, and 176.

School of Business—All NSc courses are applicable to the B.B.A. and B.Accy. degree programs; check with the director of undergraduate advising and student services in School of Business.

Elliott School of International Affairs—NSc 126, 160, 175, 176, and 180 may be used as elective credit in all undergraduate programs.

51 Introduction to Naval Science (3)

A general introduction to the naval profession and to concepts of sea power. The mission, organization, and warfare components of the U.S. Navy and Marine Corps. Overview of officer and enlisted ranks and rates, training and education, and career patterns. Naval

courtesy and customs, military justice, leadership, and nomenclature. Professional competencies required to become a naval officer.

52 Naval Ships Systems I (Engineering) (3)

A detailed study of ship characteristics and types, including ship design and control, propulsion, hydrodynamic forces, stability, compartmentation, and electrical and auxiliary systems. Included are basic concepts of the theory and design of steam, gas turbine, and nuclear propulsion.

125 Naval Ships Systems II (Weapons) (3)

Theory and employment of weapons systems, including the processes of detection, evaluation, threat analysis, weapon selection, delivery, guidance, and explosives. Fire control systems and major weapons types, including capabilities and limitations. Physical aspects of radar and underwater sound. Facets of command, control, and communications as means of weapons system integration.

126 Sea Power and Maritime Affairs (3)

A survey of the U.S. naval history. Naval aspects of U.S. conflicts from the American Revolution to the global war on terror. The influence of technological innovation, domestic politics, and foreign policy on the development and execution of naval doctrine and tactics.

150 Navigation (3)

Students develop practical skills in naval piloting procedures. Charts, visual and electronic aids, and theory and operation of magnetic and gyro compasses; inland and international rules of the nautical road. A broad overview of the celestial coordinate

system, including spherical trigonometry and how celestial information can be applied to navigation at sea. Basic principles of environmental factors affecting naval operations.

151 Naval Operations and Seamanship (3)

Relative motion vector analysis theory, formation tactics, and ship employment; practical skills in relative motion problems. Controllable and noncontrollable forces in shiphandling, ship behavior, and maneuvering characteristics; various methods of visual communication, including flaghoist, flashing light, and semaphore.

160 Evolution of Warfare (3)

This course traces the development of warfare, from earliest recorded history to the present, with focus on the impact of major military theorists, strategists, tacticians, and technological developments. The student acquires a basic sense of strategy and develops an understanding of military alternatives and the impact of historical precedent on military thought and actions.

175 Leadership and Management (3)

Organizational behavior, management, and leadership principles in the context of naval organization. The management functions of planning, organizing, and controlling; individual and group behavior in organizations; motivation and leadership. Experiential exercises, case studies, and laboratory discussions. Decision making, communication, responsibility, authority, and accountability.

176 Leadership and Ethics (3)

The interaction of leadership, organizational behavior, and human resource management. Subordinate interviewing and counseling, performance appraisal, military and civilian law, and managerial ethics and values. This capstone course integrates professional

competencies to develop understanding of the issues faced by leaders, managers, and naval officers.

180 Amphibious Warfare (3)

A historical survey of the development of amphibious doctrine and the conduct of amphibious operations. The evolution of amphibious warfare in the 20th century, especially during World War II. Present-day potential and limitations on amphibious operations, including the concept of rapid deployment force.

ORGANIZATIONAL SCIENCES AND COMMUNICATION

Professors C. Warren, L. Offermann

Associate Professors E.B. Davis, D.P. Costanza (*Chair*), N. Vasilopoulos

Assistant Professors J.C. Miller, N. Olsen, A.J. Critchfield, G. Debebe, T. Dumas

Adjunct Assistant Professor W.A. Gattis

Assistant Professorial Lecturers Q. Ahmed, M.A. DiMola, C.M. Feldman

Lecturers L.M. Corrigan, C.M. Hanson, A. Weiner

The communication major is offered by the Department of Organizational Sciences and Communication. Students are accepted as communication majors through a selective application process. Students are encouraged to apply during the first semester, or early in the second semester, of their sophomore year. Applications are not accepted from students with more than 75 credit hours. A student may apply no more than twice to the major. Minimum requirements for admission include a GPA of 3.3 and completion of, or current enrollment in, one of three courses: Comm 25, 40, or 41. Achievement of the minimum GPA does not guarantee admission to the major, because the acceptance process is selective. Application forms and the Student

Handbook for Communication Majors, which provides additional information about the major, including the application process, are available in the program office.

Bachelor of Arts with a major in communication—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Required courses in the major: Comm 25, 40, 41, 100, 110, 150, 199; 18 additional hours of 100-level courses in communication, as approved by the major advisor.
3. Required courses in related areas: 15 credit hours of 100-level courses in one other department, program, or field of study, as approved by the major advisor.

Special Honors—Seniors majoring in communication may apply for Special Honors if they meet the following criteria: (1) the Special Honors requirements stated under University Regulations; (2) the requirements for selection to Lambda Pi Eta, the National Communication Association Honor Society, which maintains a chapter in the GW Communication Program (i.e., open to majors who have completed a minimum of 24 hours in communication course work, who hold a grade-point average of 3.3 in communication courses and a grade-point average of 3.0 overall, and who are recommended by a majority of the full-time communication faculty); and (3) a grade of *A* received on the thesis required in Comm 199, Senior Seminar.

Minor in communication—Required: 18 credit hours, including Comm 25, 40 or 41, 120, 150, and two 100-level electives in communication.

Minor in organizational communication—Required: 18 credit hours, including Comm 170, 171; OrSc 109; Psyc 144; plus two courses selected from Comm 120, 140, 173, 174, 176; Psyc 119.

Minor in organizational sciences—Required: 18 credit hours, including OrSc 109, 116, 143; Psyc 144; plus two courses selected from Comm 170, 171, 173; Psyc 119, 193.

COMMUNICATION

25 **Introduction to Communication Studies (3)** Miller

Introduction to historical and intellectual development of the field. Students survey the origins of contemporary theory; learn about fundamental concepts, models, investigative tools, and contexts of communication; and explore a variety of professional opportunities awaiting communication graduates.

40 **Public Communication (3)** Miller and Staff

Study and practice of the basic techniques of public speaking used to inform, to entertain, and to persuade audiences. Emphasis on the speech-building process: audience analysis, research, development, composition, organization, style, delivery, and criticism.

41 **Interpersonal Communication (3)** Staff

Study and practice of the role of verbal and nonverbal communication in ritual, information and perspective sharing, problem solving, and relationship formation, maintenance, and dissolution. Designed to raise awareness of the complexity and power of the communication process in daily life and to help students develop their interpersonal skills cognitively, affectively, and behaviorally.

42 **Business and Professional Speaking (3)** Staff

Study of the communication process in business and professional organizations; practice in interviewing, small group communication, and public presentations. For non-majors and non-minors only.

100 **Communication Theory (3)** Critchfield

Inquiry into the nature and function of communication theory as a framework for the study of communicative behavior. Emphasis is placed on analysis of paradigmatic approaches in rhetorical, interpersonal, and mass communication theories and models, and on examination of contemporary research literature in communication. Prerequisite: Comm 25.

110 **Research Methods** (3) Staff

Processes of inquiry within interpersonal and public communication. Students are introduced to concepts of framing research questions, conducting literature reviews, developing a research design, using qualitative and quantitative research tools, and interpreting results of research in communication. Prerequisite: Comm 100.

120 **Small Group Communication** (3) Warren and Staff

The study and practice of communication in small groups, focusing on problem solving, norms, roles, and leadership. Prerequisite: Comm 25 or permission of the instructor.

140 **Nonverbal Behavior** (3) Critchfield and Staff

Introduction to predominant theories, principles, and problems in the study of nonverbal behavior; application of research results to everyday life. Topics include facial expression, eye behavior, physical appearance, body movement and gestures, tactile messages, vocal characteristics, use of time, spatial dynamics, gender and life-stage differences.

150 **Persuasion** (3) Warren

In-depth study of the principles and techniques of persuasion from both production and consumption perspectives, in both personal and mediated contexts. Emphasis on the common-premise model, with consideration of such topic areas as pathos/ethos/logos,

attitude and behavior change, effectiveness, ethics, and subconscious influence.

Prerequisite: Comm 25.

170 **Organizational Communication (3)** Critchfield

Exploration of the philosophy, process, problems, and potential of human communication within organizational contexts. May involve experiential workshops and fieldwork.

Prerequisite: Comm 41 or 120 or permission of instructor.

171 **Professional Communication (3)** Staff

Principles and theories of communication applied to situations encountered in organizational and professional environments. Development of knowledge and abilities for workplace tasks, such as interviewing, facilitating meetings, providing performance appraisals, designing and delivering instructional materials and other professional presentations.

172 **Health Communication (3)** Staff

Exploration of the nature, functions, and impact of relational communication in the context of health care. Both formal (health care organizations) and informal (family communication) systems may be studied. Topics can include provider–patient interaction, media and health, confirmatory communication. Prerequisite: Comm 41 or 100 or permission of instructor.

173 **Communication in a Mediated World (3)** Staff

An exploration of human-to-human communication mediated by computer technology. Traditional communication theories will be applied and adapted to the computer-mediated realm; newer theories of computer-mediated communication are addressed.

174 **Intercultural Communication (3)** Miller

Exploration of the process, trends, rewards, and difficulties of human communication in intercultural contexts, with an eye toward establishing guidelines for mitigating miscommunication across cultures. May involve fieldwork. Prerequisite: Comm 41 or permission of instructor.

176 Issues and Image Management (3) Staff

The issues and image management function in corporate, professional, and nonprofit organizations. Assignments may include in-class collaboration on case studies of communication campaigns and crisis communication strategies, interviews with professionals in the practice of communication management, and a communication audit of strategies and messages of a selected organization.

180 Communication Criticism (3) Warren

Evaluation of communication paradigms along critical dimensions of analysis.

Prerequisite: Comm 40 or 150 or permission of instructor.

190 Selected Topics (3) Staff

Topic announced in the *Schedule of Classes*. May be repeated for credit provided the topic differs.

196 Independent Study (1 to 3) Staff

Independent research and special projects. Open to seniors or exceptionally well-prepared juniors majoring in communication. Before students are permitted to register, they must submit a written proposal of the plan of study and obtain approval of the faculty member who will direct the study and of the program chair.

197 Internship (3) Warren

For communication majors and minors. Student-secured internships in communication-related organizations. Students spend at least 15 hours per week doing communication-related work in a public or private organization. Meetings, reports, and/or analysis paper may be required by supervising instructor. Admission requires prior program approval. Graded on a Pass/No Pass basis.

199 **Senior Seminar (3)** Warren, Critchfield

Capstone course limited to communication majors. Selected reading and discussion. Each student works on an individually designed research project throughout the term, the results of which will be presented in a major paper. Prerequisite: Comm 100 and 110.

ORGANIZATIONAL SCIENCES

109 **Strategic Systems Thinking in Organizations (3)**

The evolution of organizations in terms of social context and the present-day systems environment. Emerging roles of leadership, communication, and employer–employee relationships. Organizational models are used to develop strategic thinking about career and life roles.

116 **Leading Change (3)**

An in-depth introduction to and analysis of concepts and techniques of leadership, including motivation, goal alignment, incentives, teamwork, and communication. Conceptual and empirical background of the management of change.

143 **Leadership and Performance (3)**

Leadership from an organization system perspective. Theory, research, and applications pertaining to how leaders can reduce uncertainty through appropriate adaptive change.

190 **Special Topics (3)** Staff

Topics to be announced in the *Schedule of Classes*. May be repeated for credit provided the topic differs.

PHILOSOPHY

University Professors P.J. Caws, K.F. Schaffner

Professors W.B. Griffith (*Chair*), R.P. Churchill, D. DeGrazia

Associate Professor G. Weiss

Assistant Professors M. Friend, E.J. Sidel, J.C. Brand-Ballard, A. Pichanick

Adjunct Associate Professor N. Mikhalevsky

Assistant Professorial Lecturer R. Carr

Two options are offered for the major in philosophy, both designed to give a broad background in philosophy but with somewhat different emphases. The first option reflects the traditional structure of the discipline and its subfields; it is especially recommended for those considering the possibility of graduate study in philosophy. The second option is designed for those primarily interested in philosophy in its relationship to public affairs.

Bachelor of Arts with a major in philosophy (traditional option)—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite course—Phil 51; Phil 45 recommended.
3. Required courses in related areas—3 hours of non-Western religious philosophy selected from Rel 152, 157, 158, 160, 161, 164.
4. Required courses in the major—a minimum of 30 credit hours, including as foundational courses Phil 111, 112, 131; one course selected from Group A (value theory)—Phil 125, 132, 133, 142, 162; one course from Group B (epistemological)—Phil 121, 151, 152, 153; one course

from Group C (later history)—Phil 113, 172, 192, 193; the proseminar—Phil 198; plus three electives chosen from 100-, 200-, or 700-level courses, selected in consultation with a departmental advisor.

Phil 121, 151, 153, 192, and 193 are recommended for students considering graduate-level study of philosophy; French or German language study is recommended as well.

Bachelor of Arts with a major in philosophy (public affairs option)—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite course—Phil 51; Phil 45 recommended
3. Required courses in related areas—6 credit hours selected from Hist 39–40, 71–72; PSc 105, 106, 107, 110, 114, 115; Econ 11–12, 101–2, 104.
4. Required courses in the major—a minimum of 30 credit hours, including as foundational courses Phil 111, 112, 131, 132; two courses selected from Group A (value theory)—Phil 125, 133, 135, 142, 162; one course from Group B (epistemological)—Phil 121, 151, 152, 153; the proseminar—Phil 198; two electives selected in consultation with the advisor from 100-, 200-, or 700-level courses.

Five-Year Bachelor of Arts with a major in philosophy (public affairs option)/Master of Arts in the field of public policy with a concentration in philosophy and social policy—Students interested in this program should consult a departmental advisor as soon as possible.

Special Honors—In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a student must (1) have attained a 3.7 grade-point average in the major and at least a 3.25 average overall; (2) submit an honors paper prepared under the supervision of a faculty advisor in the department. Only if a committee

of three faculty members in the department approves the honors paper will Special Honors be recommended.

Minor in philosophy—Required: a minimum of 18 credit hours of philosophy courses, including two courses chosen from Phil 51, 111, 112, 113, 172; one course from Phil 125, 131, 132, 133, 135, 142, 162; and one course from Phil 121, 151, 152, 153.

Minor in applied ethics—Required: 18 credit hours of philosophy courses, including Phil 51, 131, and 132, plus three courses selected from Phil 133, 135, 142, 775, or with permission of the instructor, seniors may select from Phil 230, 231, 238, 242, 250, 262, which are listed in the Graduate Programs Bulletin.

45 **Introduction to Logic (3)** Friend, Saidel, and Staff

Introduction to informal logic, scientific argument, and formal logic. The informal logic component focuses on fallacies of reasoning and practical applications of logic. The formal logic component focuses on translation from English into propositional logic, truth tables, and proofs in propositional logic.

(Fall, spring, and summer)

51 **Introduction to Philosophy (3)** Griffith, Saidel, and Staff

Readings from major philosophers and study of their positions on the most basic questions of human life. Topics include such issues as: What is justice? What is knowledge? What is reality? Does God exist? What is the mind? Do humans have free will? (Fall, spring, and summer)

62 **Philosophy and Film (3)** Caws

Philosophical problems and theories of perception, meaning, personal identity, and moral agency and their illustration in the context of cinema. Cinema and its derivatives (TV,

video) as prime routes to experience of the natural and social worlds in an age of communication. Readings in classical and contemporary philosophy and in film theory; screening of a series of films. (Spring)

111 **History of Ancient Philosophy** (3) Pichanick

History of Western philosophy from the Pre-Socratics to the Stoics (6th century BCE to 1st century CE). Major emphasis on the writings of Plato and Aristotle. Among themes to be covered: knowledge and reality, political and moral philosophy. (Fall and spring)

112 **History of Modern Philosophy** (3) Churchill

History of Western philosophy of the 16th through 18th centuries; Continental Rationalism and British Empiricism from the scientific revolution through the Enlightenment; major emphasis on Descartes, Spinoza, Leibniz, Locke, Berkeley, Hume, and Kant. Prerequisite: Phil 51 or equivalent. (Spring)

113 **19th-Century Philosophy** (3) Carr

European philosophy of the 19th century, with major emphasis on Kant, Hegel, Schopenhauer, Kierkegaard, and Nietzsche. Prerequisite: Phil 51 or equivalent. (Fall)

121 **Symbolic Logic** (3) Friend and Staff

Analysis and assessment of deductive arguments, using propositional, predicate, and other logics; philosophical basis and implications of logical analysis; metatheory of logic; modal and non-standard logics. Prerequisite: Phil 45 or permission of instructor. (Fall and spring)

125 **Philosophy of Race and Gender** (3) Weiss and Staff

A theoretical examination of the bodily, social, discursive, and political effects of patriarchy, racism, and classism. (Fall and spring)

- 131 **Ethics: Theory and Applications** (3) Griffith, DeGrazia, Churchill

Examination of leading ethical theories, e.g., utilitarianism, deontology, virtue theory, as well as anti-theory and methodology in ethics. Applications to contemporary problems. (Fall and spring)

- 132 **Social and Political Philosophy** (3) Griffith, Brand-Ballard, Churchill

Philosophical theories about how economic, political, legal, and cultural institutions should be arranged. Topics include the meaning and significance of liberty, the legitimate functions of government, the nature of rights, the moral significance of social inequality, and the meaning of democracy. (Fall and spring)

- 133 **Philosophy and Nonviolence** (3) Churchill

Violence and nonviolence in the personal and social struggle for meaningful, just, and peaceful existence; philosophical foundations of pacifism and nonviolent resistance in the thought of Tolstoy, Gandhi, King, and others; philosophical inquiry into war, terrorism, genocide and ethnic conflict, as well as human rights, humanitarian intervention, and just war theory. (Fall)

- 135 **Ethics in Business and the Professions** (3) Griffith and Staff

Basic concepts and theories of ethics for analysis of moral issues arising in business and in professional practice. (Fall and spring)

- 142 **Philosophy of Law** (3) Brand-Ballard

Systematic examination of fundamental concepts of law and jurisprudence; special emphasis on the relationship between law and morality. (Fall)

- 151 **Philosophy and Science** (3) Staff

Analysis of the structure and meaning of science, including scientific progress and theory change, objectivity in science, the drive for a unified science, and ways science relates to everyday understandings of the world. Attention given to various sciences, including physics, biology, and neuroscience. Prerequisite: Phil 51 or two semesters of college-level science. (Fall)

152 Theory of Knowledge (3)

DeGrazia

Inquiry into the basis and structure of knowledge, the problems of skepticism and justification, the relations between subjectivity and objectivity, and the contributions of reason, sense, experience, and language. Prerequisite: Phil 51 or equivalent; Phil 112 also recommended. (Spring)

153 Mind, Brain, and Artificial Intelligence (3)

Staff

Investigation of the nature of mind from a variety of perspectives, including neuroscience, cognitive psychology, and artificial intelligence, as well as traditional philosophy of mind. Possible additional topics include consciousness, mental disorders, animal minds, and the nature and meaning of dreams. (Spring)

161 Philosophy and Literature (3)

Weiss

Critical investigation of the sociopolitical commitments that inform the practices of reading and writing as discussed by Sartre, Barthes, Foucault, Baudrillard, and others. Focus on the development of existentialist themes, including authenticity, freedom, temporality, and death in the work of Kafka, Tolstoy, Mann, Woolf, Sexton, and Stein. (Spring)

162 Aesthetics (3)

Weiss, Mikhalevsky

The problem of artistic representation and the nature of aesthetic experience as related to the creation, appreciation, and criticism of art. Special emphasis on nonrepresentational works of art and their interpretation. Prerequisite: Phil 51 or 111 or 112 or 113. (Fall)

172 **American Philosophy** (3) Caws, Carr

A survey of American philosophical thought, focusing on the late 19th through mid-20th centuries. Covers American Pragmatism (Peirce, James, Dewey) in depth; other authors may include Thoreau, Emerson, Royce, Santayana, Mead, Quine and Rorty. (Spring)

192 **Analytic Philosophy** (3) DeGrazia, Saidel

The dominant movements of 20th-century Anglo-American philosophy, including logical positivism, British ordinary language philosophy, and neopragmatism, as represented by Russell, G.E. Moore, Wittgenstein, Ayer, Quine, Kripke *et al.* Prerequisite: One other 100-level philosophy course. (Fall)

193 **Phenomenology and Existentialism** (3) Weiss, Caws

An intensive exploration of the ontological and existential philosophies of Kierkegaard, Bergson, Husserl, Heidegger, Sartre, Merleau-Ponty, de Beauvoir, and Camus.

Prerequisite: One other 100-level philosophy course.

(Spring)

195 **Topics in Value Theory** (3)

Variable topics in ethics, political philosophy, aesthetics, and other subfields in normative philosophy. Prerequisite: one 100-level course on related subject matter or permission of the instructor.

196 **Topics in Theory of Knowledge** (3)

Variable topics in epistemology, philosophy of science and mathematics, philosophy of mind, and similar subfields. Prerequisite: one 100-level course on related subject matter or permission of the instructor.

198 **Proseminar** (3)

Staff

Variable topics; preparation and presentation of a major research paper. Open only to philosophy majors, in either the junior or senior year as approved by major advisor. (Fall and spring)

199 **Readings and Research** (3)

Staff

(Fall and spring)

PHYSICS

Professors D.R. Lehman, B.L. Berman, L.C. Maximon (*Research*), W.C. Parke, R.A. Arndt

(*Research*), W.J. Briscoe, C. Bennhold (*Chair*)

Associate Professors J.R. Peverley, H. Haberzettl, K.S. Dhuga, M.E. Reeves, G. Feldman, I.

Strakovsky (*Research*), R.L. Workman (*Research*), A. Eskandarian, F.X. Lee, A. Opper

Assistant Professors C. Zeng, J.J. Balbach, W. Peng, H. Griesshammer, Y. Ilieva (*Research*)

Professorial Lecturer B. Ratnam

Associate Professorial Lecturers J.T. Broach, M.F. Corcoran

Bachelor of Arts with a major in physics—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Phys 21, 22, 23; Math 31, 32, 33.
3. Required courses in related areas—Chem 11 or BiSc 13; one approved 100-level math course.

4. Required courses in the major—Phys 151 or 152, 161, 164, 165, 167, and two approved 100-level physics electives (Phys 195 is recommended).

Bachelor of Science with a major in physics—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Phys 21, 22, 23; Math 31, 32, 33.
3. Required courses in related areas—Chem 11 or BiSc 13; one approved course in computer programming and two approved 100-level math courses..

4. Required courses in the major—Phys 151 or 152, 161, 164, 165, 167, 195, and two approved 100-level physics electives.

Bachelor of Science with a major in biophysics—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Phys 21, 22, 23; Math 31, 32, 33.
3. Required courses in related areas—Chem 11–12, 151–52; BiSc 13, 14, 109, and either 103 or another approved 100-level BiSc course; Stat 127; one approved computer programming course.

4. Required courses in the major—Phys 127–28, 151 or 152, 161, 164, 165, 195.

Bachelor of Arts with a major in physics and Bachelor of Science in any SEAS undergraduate field—Five-year programs leading to the two degrees are available. Check with the Department of Physics or with the School of Engineering and Applied Science.

Special Honors—To graduate with Special Honors, a student must meet the eligibility requirements stated under the University Regulations and submit for departmental approval an honors thesis based on a two-semester research project. In addition, the student must have a cumulative grade-point average of at least 3.5 in physics courses and 3.0 overall.

Minor in physics—Required: Phys 21, 22, 23, plus two approved 100-level physics courses.

Minor in biophysics—Required: Phys 21, 22, 23, 127–28, and one approved 100-level biological sciences course.

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

ASTRONOMY

1 Introduction to Astronomy I (3) Maximon, Dhuga, Parke, Briscoe

Primarily for non-science majors. Classical through modern astronomy, with introduction to basic principles underlying astronomical systems and observations. Lectures cover electromagnetic radiation, optical instruments, and the solar system. Laboratory (2 hours). Prerequisite: high school algebra. Laboratory fee, \$55. (Fall and spring)

2 Introduction to Astronomy II (3) Maximon, Dhuga, Parke, Briscoe

Primarily for non-science majors. Stellar and extragalactic astronomy, including introduction to quantum aspects of electromagnetic radiation and atomic physics, stellar spectra, and stellar evolution. Laboratory (2 hours). Prerequisite: Astr 1. Laboratory fee, \$55. (Spring)

51 Modern Cosmology (3) Parke, Briscoe

A non-mathematical treatment of cosmology, describing the origin and evolution of the universe. Topics include the nature of quasars, pulsars, stellar and galactic black holes, antimatter, gravitational lensing, dark matter, cosmic background radiation, the origin of the elements, big-bang theory, and the future of the universe. Prerequisite: Astr 2.

191 Space Astrophysics (3) Corcoran

Physical processes of celestial phenomena as determined from space-based instrumentation. While the entire electromagnetic spectrum is covered, the high-energy (X-ray and gamma ray) region is emphasized. Results from ground-based instrumentation (e.g., radio and optical) may be introduced. Prerequisite: Phys 22 or equivalent.

PHYSICS

- 1 **General Physics I (4)** Bennhold, Feldman, Balbach
Classical physics. Mechanics, including Newton's laws of motion, force, gravitation, equilibrium, work and energy, momentum, and rotational motion; periodic motion, waves, and sound; heat and thermodynamics. Prerequisite: high school trigonometry. Laboratory fee, \$55. (Fall and spring)
- 2 **General Physics II (4)** Feldman, Bennhold, Balbach
Classical and modern physics. Electrostatics, electromagnetism, direct and alternating current circuits, and electromagnetic radiation; geometrical and physical optics; special relativity; quantum theory; atomic physics; nuclear physics; particle physics; astrophysics and cosmology. Prerequisite: Phys 1. Laboratory fee, \$55. (Fall and spring)
- 7 **Music and Physics (4)** Berman
Primarily for non-science majors. A comparative study of music and physics, showing parallels in the history of the two fields and emphasizing those topics in physics related to the theory of music and the production of sound by musical instruments, particularly classical mechanics and wave motion. Prerequisite: high school algebra and geometry. Laboratory fee, \$55.
- 8 **Origin and Evolution of Ideas in Physics (4)** Staff

Primarily for non-science majors. The evolution of ideas and their historical continuity in the search for basic physical theories. By presenting the world-views of great physicists of the past, the division of physics into many sub-disciplines is avoided and a humanistic approach is achieved. Prerequisite: high school algebra. Laboratory fee, \$55.

21 **University Physics I (4)** Haberzettl, Lee, Opper

Classical mechanics using calculus. Newtonian mechanics: force, momentum, work and energy, mechanical equilibrium, linear, periodic and rotational motion. Gravitation and fields. Atoms, physical properties of matter. Energy transfer and waves, sound.

Prerequisite: Math 31; corequisite: Math 32. Laboratory fee, \$55. (Fall and spring)

22 **University Physics II (4)** Berman, Lee, Opper

Thermodynamics and classical electromagnetism using calculus. Equations of state, heat, and the laws of thermodynamics. Electrostatics, Gauss's law, capacitance. Electric resistance, electric current. Magnetism. Electrodynamics and electromagnetic induction. Maxwell's theory and electromagnetic radiation. Geometric and physical optics.

Prerequisite: Phys 21 and Math 32. Laboratory fee, \$55. (Fall and spring)

23 **University Physics III (3)** Reeves, Feldman

Modern physics using calculus. Relativity. Wave-particle duality, quantum mechanics. The hydrogen atom, Pauli principle. Quantum statistics and radiation. Quantum theory of the condensed state, superconductivity. Nuclear physics. Applications to astrophysics and nucleosynthesis. General relativity. The big bang theory. Prerequisite: Phys 22; corequisite: Math 33. (Fall)

127–28 **Biophysics: Physics in the Life Sciences (3–3)**

Parke, Zeng

Physical principles applied to biological systems, medicine, and instrumentation in medicine and biology. Applications include biological transducers, molecular biophysics, bioenergetics, radiation biology, ordering theory, neural networks, and protein structuring. Prerequisite: Phys 1 and 2 or equivalent.

151 **Intermediate Laboratory I: Techniques and Methods (3)** Peverley

Experiments in electromagnetism, classical and quantum mechanics, atomic and nuclear physics with emphasis on experimental methods. Laboratory fee, \$55. (Fall)

152 **Intermediate Laboratory II: Instrumentation (3)** Peverley

Elementary electric and electronic analog and digital circuits. Topics include passive and active components in DC and AC circuits and operational amplifiers, with emphasis on measurement techniques. Laboratory fee, \$55. (Spring)

161 **Mechanics (3)** Briscoe, Haberzettl, Reeves

Mechanics of mass points and rigid bodies. Newton's laws, conservation laws, Euler's equations, inertia tensor, small vibrations, and elements of Lagrange's and Hamilton's equations. (Spring)

163 **Physical and Quantum Optics (4)** Peverley

Lecture (3 hours), laboratory (3 hours), Wave motion, electromagnetic aspects of light, dispersion of light in media, geometrical optics, polarization and optical properties of crystals, interference, diffraction, lasers, holography. Mathematical tools, including Fourier methods, developed as needed. The quantum description of light complements the classical description. Laboratory fee, \$55.

164 **Thermodynamics (3)** Staff

Principles and application of thermodynamics to reversible and irreversible processes, with derivation from statistical postulates applied to the microscopic behavior of large systems near equilibrium. (Spring)

165 **Electromagnetic Theory I (3)** Peverley

Electrostatics and magnetostatics, electric and magnetic fields in matter, scalar and vector potentials, electromagnetic induction. Maxwell's equations. The methods of vector and tensor calculus are developed as needed, as are the method of images, Fourier series, and some computational methods. (Fall)

166 **Electromagnetic Theory II (3)** Staff

Conservation laws, electromagnetic waves, radiation, relativistic formulation of electrodynamics and potential fields. (Spring)

167 **Principles of Quantum Physics (3)** Reeves, Zeng

Development of logical structure and experimental bases for modern quantum mechanics. Simple examples worked out to clarify the structure; primary emphasis on conceptual framework and its mathematical realization; careful consideration of the laboratory results to which the theory is a response.

170 **Solid-State Physics (3)** Peverley, Reeves, Zeng, Balbach

Structure of solids, lattices and lattice defects, deformation, vibrational and electronic contribution to specific heats, binding energies, electronic states in metals and semiconductors, magnetic properties of solids, superconductivity. Prerequisite: Phys 167 or permission of instructor.

175 **Nuclear Physics (3)** Berman, Briscoe, Workman

Introduction to application of quantum physics in the description of nuclei and their interactions. Properties of nuclei, nuclear models, nuclear forces, and nuclear reactions are considered. Specific topics include the deuteron, n-p scattering, the optical model, the shell model, the liquid-drop model, beta decay, fission, and fusion. Prerequisite: Phys 167 or permission of instructor.

181 **Computational Physics** (3) Reeves, Dhuga, Haberzettl, Eskandarian

Topics include celestial mechanics, chaotic systems, fluid dynamics, and other such complex systems that require a computational approach. Prerequisite: three semesters of undergraduate calculus and a complete sequence of calculus-based physics; working knowledge of C or FORTRAN. Laboratory fee, \$55.

195 **Undergraduate Research** (3) Staff

Research on problems approved by the faculty. May be repeated once for credit.

Laboratory fee, \$55.

POLITICAL COMMUNICATION

See **Media and Public Affairs**.

POLITICAL SCIENCE

University Professor J.N. Rosenau

Professors B. Reich, H.R. Nau, J.B. Manheim, C. McClintock, L. Sigelman, M.J. Sodaro, S.L.

Wolchik, H. Harding, D. Shambaugh, C.J. Deering (*Chair*), H.B. Feigenbaum, N.J. Brown,

H.L. Wolman, F. Maltzman, M. Finnemore, J. Goldgeier, S.K. Sell, B. Dickson, P.

Wahlbeck, S. Binder, M.E. Brown

Associate Professors J.H. Lebovic, R.P. Stoker, A. Bowie, D.D. Avant, M.M. Mochizuki, S.J.

Balla, S. Wiley, I. Creppell

Assistant Professors E.Z. Csergo, W.J. Winstead, E. Voeten, E.A. Posner, M.A. Schwartzberg,
K.J. Morgan, A.E. Searight, C. Rector, S. Kelts, E.D. Lawrence, G.S. Lambright, H. Farrell,
H.E. Hale, J.M. Sides

Instructor E.J. Teitelbaum

Bachelor of Arts with a major in political science—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite: PSc 1, 2, and 3 (or the equivalent). Six courses in the social sciences, other than political science, to include 6 hours of history or 6 hours of economics. Twelve credit hours of introductory foreign language and statistics are strongly recommended.
3. Required courses in the major: 30 credit hours of 100-level political science courses, including a distribution requirement that consists of 3 credit hours from each of the following groups: Group A (comparative politics)—PSc 130, 131, 134, 167, 170, 173, 177, 179, 181, 183; Group B (American government and politics)—PSc 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 124, 128, 129; Group C (international politics, law, and organizations)—PSc 139, 140, 142, 144, 146, 149, 161, 168, 175, 176, 178, 180, 182, 184; Group D (methodology)—PSc 101, 104; Group E (political thought)—PSc 105, 106, 107, 108, 110.

Every major must complete a proseminar (which counts toward the 30-hour requirement) in the junior or senior year. A maximum of two of these may be included in a student's program; such courses do not satisfy the department's group distribution requirements. A 200-level course may be substituted for the proseminar requirement with the written permission of the instructor and the undergraduate coordinator.

Bachelor of Arts with a major in political science (public policy focus)—Requirements are the same as for the B.A. with a major in political science with the required 30 credit hours of 100-level courses in political science distributed as follows: PSc 104; 9 credit hours in policy-oriented courses to be selected from PSc 112, 117, 122, 124, 146; one policy-oriented proseminar; 3 additional credit hours from each of Groups A, B, C, and E; and 3 credit hours in a political science elective at the 100 level.

No more than 3 hours of service-learning or internship courses may be credited toward the major; these courses do not satisfy the distribution requirement. Specific group credit for offerings of PSc 190 Special Topics is determined by the undergraduate advisor.

Five-Year Bachelor's/Master's Dual Degree Programs—Three master's programs can be undertaken in combination with the Bachelor of Arts with a major in political science. Departmental majors should consult the undergraduate program advisor at the beginning of the junior year (after completing 60 credit hours at GW) for the dual degree programs that lead to the Master of Arts in the field of legislative affairs and the Master of Public Policy (the M.P.P. is available only to majors in the public policy focus). For the dual degree program leading to the Master of Arts in the field of political science, students should consult the undergraduate program advisor as soon as possible in order to select courses appropriately; the program is available only to students who qualify for Special Honors.

Special Honors—Students may apply for graduation with Special Honors. To qualify, a student must fulfill the general requirements stated under University Regulations, have a GPA in the major of 3.5 or higher, and take PSc 192 in the semester preceding the final semester of study. Those with a GPA in the major of 3.8 and higher will then be recommended for Special Honors. Those with a GPA in the major between 3.5 and 3.7 must complete an independent research

project in PSc 192 that has been approved as meriting Special Honors by two members of the Political Science faculty. Application for Special Honors must be in writing and received by the undergraduate coordinator by the third week of the semester preceding the final semester of study.

Minor in political science—Required: PSc 1, 2, and 3 (or the equivalent) plus 12 credit hours of 100-level political science courses, including a distribution requirement of one course each from Groups D and E. A minimum of 9 credit hours of other social science courses is also required.

With permission of the instructor and the undergraduate coordinator, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

Departmental prerequisite: PSc 1 is prerequisite to Group A courses (comparative politics), PSc 2 is prerequisite to Group B courses (American government and politics), and PSc 3 is prerequisite to Group C courses (international politics, law, and organizations). Courses are defined by their group under item 3, above. Elliott School students substitute IAff 5 for PSc 3 as a prerequisite to Group C courses. Qualified juniors and seniors who are not political science majors and who wish to take 100-level PSc courses without having the appropriate prerequisites may do so only with the written permission of the instructor.

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|---|--|-------------------------|
| 1 | Introduction to Comparative Politics (3) | Sodaro, Dickson, Morgan |
| | Concepts and principles of comparative analysis, with an examination of politics and government in selected countries. | |
| 2 | Introduction to American Politics and Government (3) | Sigelman, Maltzman |

Structure, powers, and processes of the American political system and the impact on public policy.

3 **Introduction to International Politics (3)** Goldgeier, Nau, Lebovic, Rector

Analysis of world politics, focusing on the role of nation-states and international organizations and on selected foreign policy issues.

11–12 **Introduction to Politics (6–6)**

Kelts

Role of personal and social values in politics. Fall: Problems in the Western (especially American) tradition of political science. Spring: Thinking outside the Western state: culture, nationalism, ethnic conflict, democratization, international conflict. Admission by special selection process.

101 **Scope and Methods** Lebovic, Wahlbeck, Wiley, Voeten, Lawrence
 of Political Science (3)

Nature of political inquiry, approaches to the study of politics and government, empirical methods of research. Laboratory fee, \$20.

104 **Methods of Public Policy Analysis (3)** Stoker, Balla

Introductory overview of the concepts, issues, and techniques of systematic policy analysis and its role in the policy process.

105–6 **Major Issues of Western Political Thought (3–3)** Creppell, Schwartzberg, Kelts

PSc 105: foundations of Western political thought—Plato to Aquinas. PSc 106: history of political thought from the 16th through the late 19th century, as set forth in the works of representative thinkers.

107 **20th-Century Political Thought (3)** Creppell, Winstead

Recent Western political thought; analysis and critique of the legacies of modern political theories and ideologies.

108 **Freedom and Equality (3)** Kelts

Case analysis of major ideas related to freedom and equality in the Western political tradition.

110 **American Political Thought (3)** Staff

Political thought in the U.S. from colonial times to the present as seen through major representative writings.

111 **State and Urban Politics (3)** Wolman

Comparative analysis of context, institutions, processes, and policies of state and urban political systems.

112 **State and Urban Policy Problems (3)** Wolman

Selected issues in state and urban policymaking, with emphasis on urban and metropolitan settings.

113 **Judicial Politics (3)** Wahlbeck

An examination of judicial process and behavior. Emphasis on judicial selection, decision making, interaction with the political environment, and impact and implementation of decisions.

114–15 **U.S. Constitutional Law and Politics (3–3)** Wahlbeck

PSc 114: Separation of powers, federal–state relationships, economic regulation. PSc

115: Political and civil rights.

116 **The American Presidency (3)** Maltzman, Lawrence

Examination of the politics of presidential selection, the authority of the contemporary institution, the mechanisms and processes for formulating public policy, and the influences of personality on performance in office.

- 117 **Executive Branch Politics (3)** Balla

Basic concepts in public administration; influence of bureaucratic politics on policy formulation and implementation. Same as PAd 125.

- 118 **Legislative Politics (3)** Deering, Maltzman, Binder

Theory, structure, and process of the U.S. Congress, with emphasis on elections, party organization, committees, and floor procedure, in the context of executive–legislative relations and interest-group activities.

- 119 **U.S. Political Parties and Politics (3)** Binder

Role of parties as a linkage between mass preferences and government policies.
Organization, nominations, voting, and activities in legislative and executive branches.

- 120 **Public Opinion and Political Psychology (3)** Sides

Sources of mass political attitudes and behavior; voting and political campaigning.

- 121 **U.S. Political Participation (3)** Sides

Examination of the various forms of American political participation in electoral and governmental politics and their effects on the political process.

- 122 **Science, Technology, and Politics (3)** Rycroft

Multiple impacts of scientific and technological developments on the political systems.
Discussion of public policies for support, use, and control of science and technology.

- 124 **Issues in Domestic Public Policy (3)** Stoker, Balla

Examination of the decision-making process and the substance of various issues in domestic public policy in such areas as crime, economics, education, energy, the environment, poverty, and health.

- 128 **Media, Politics, and Government (3)** Staff

Same as SMPA 128.

- 129 **Television and Politics (3)** Sides

Examination of the impact of television on American politics and society, the nature of coverage of political issues and campaigns, the dynamics of selecting and presenting news stories.

- 130 **Comparative Politics of Western Europe (3)** Feigenbaum and Staff

Comparative political analysis with primary focus on the principal states of Western Europe.

- 131 **Comparative Politics of Central and Eastern Europe (3)** Wolchik

Specific countries vary, to include nations of central and Eastern Europe and/or the newly independent states.

- 134 **Global Perspectives on Democracy (3)** Brown, Dickson

International experiences with the historical evolution and current nature of democratic political systems.

- 139 **International Political Economy (3)** Sell, Posner

Analysis of the political aspects of global economic relationships, focusing on such issues as economic hegemony, interdependence, trade relations, development assistance, multinational corporations, and the role of international organizations.

- 140 **Theories of International Politics (3)** Nau, Lebovic, Goldgeier, East

Exploration of alternative theoretical approaches to understanding world politics in its historical and contemporary dimensions.

142 **International Organizations (3)** Finnemore, Voeten

Development and operations of the United Nations, regional organizations, and functional international organizations.

144 **Public International Law (3)** Staff

Survey of essential principles and concepts of public international law through case analysis and with reference to political factors.

146 **U.S. Foreign Policy (3)** Goldgeier

Constitutional, political, and international factors that determine the formulation, execution, and substance of U.S. foreign policy.

149 **Military Force and Foreign Policy (3)** Avant

Impact of military considerations on U.S. foreign policy; major problems in national security, e.g., strategic weaponry, military assistance, regional security problems.

161 **European–Atlantic Relations (3)** Staff

International politics of the North Atlantic area, the European Common Market, and U.S.–European relations.

167 **Human Rights (3)** Staff

Human rights theory, the various movements for human, religious, civil, political, and other rights.

168 **Post-Soviet Foreign Policy (3)** Staff

External problems and policies of Russia and the other successor states of the former USSR (especially the Baltics, Ukraine, and southern rim of the former Soviet Union).

- 170 **Comparative Politics of China and Northeast Asia (3)** Dickson
Political institutions and processes of China (including Taiwan), Japan, and Korea since World War II. Influence of indigenous traditions and foreign contacts.
- 173 **Comparative Politics of Southeast Asia (3)** Bowie
Comparative analysis of Southeast Asian politics and economics, with focus on democratization and economic liberalization.
- 175 **International Relations of East Asia (3)** Mochizuki, Shambaugh, Harding
Analysis of the foreign policies of selected East Asian countries and the foreign policies of major powers toward the region.
- 176 **The Arab–Israeli Conflict (3)** Reich
Origins, evolution, and issues of the Arab–Israeli conflict.
- 177 **Comparative Politics of the Middle East (3)** Reich, Brown
Politics of the eastern Arab states, Turkey, Iran, and Israel.
- 178 **International Relations of the Middle East (3)** Reich, Brown
Analysis of the regional and international relations of the Middle East.
- 179 **Israeli Politics and Foreign Policy (3)** Reich
Examination of the institutions, processes, and issues of Israeli politics and foreign policy.
- 181 **Comparative Politics of Middle and Southern Africa (3)** Lambright
Comparative analysis of political systems in selected countries of non-Mediterranean Africa.
- 182 **African International Politics (3)** Lambright

Analysis of interstate relations in Africa and of selected aspects of African relations with the outside world. Recommended prerequisite: PSc 181.

183 **Comparative Politics of Latin America** (3) McClintock

The politics of selected countries in South America, Central America, and the Caribbean. Emphasis on revolutionary movements and democratization.

184 **International Relations of Latin America** (3) McClintock

Emphasis on U.S. foreign policy toward Latin America.

187 **Internship** (1 to 3) Wiley

Study of political behavior and institutions through internship experience. Open to departmental major only. Admission requires departmental approval and junior standing.

190 **Selected Topics** (3) Staff

191 **Independent Study** (1 to 3) Staff

For departmental majors and minors. Prerequisite: 15 credit hours of 100-level political science courses and approval of the undergraduate program advisor and the faculty member who will direct the study.

192 **Proseminar** (3) Staff

Examination of selected problems in political science. Admission requires departmental approval.

PORTUGUESE

See **Romance, German, and Slavic Languages and Literatures**.

PSYCHOLOGY

Professors E. Abravanel, L.A. Rothblat, R.A. Peterson, P. Wirtz, D. Reiss, C.K. Sigelman, G.

Howe (*Research*), L.R. Offermann, P.J. Poppen (*Chair*), E. Hirshman, W.J. Frawley, M.C. Zea

Associate Professors L. Brandt, C.A. Rohrbeck, S. Dopkins, S.D. Molock, J.M. Ganiban, D.P.

Costanza, E. Davis, P.J. Moore

Assistant Professors C. Beil (*Research*), N. Vasilopoulos, J.W. Philbeck, D.E. Schell, C. Gee, N.

Le, A.N. Zucker, T.L. Dodge, S. Lambert, M.H. Sohn

Adjunct Assistant Professor K. Ross-Kidder

Lecturer P.J. Woodruff

Bachelor of Arts with a major in psychology—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.

2. Prerequisite course—Psyc 1.

3. Required courses in related areas:

(a) Stat 53 or equivalent. Students are encouraged to take a second statistics course to meet the general curriculum requirement in quantitative and/or logical reasoning.

(b) 6 credit hours from one of the following departments: Anthropology, Economics, History, Political Science, or Sociology; an additional 3 credit hours from a different one of these departments or from American Studies, Geography, or Philosophy.

4. Required courses in the major—three survey courses (two chosen from Psyc 11, 12, 13 and one from Psyc 14, 15); Psyc 101, 105 or 106, 118 or 121, 196, and four additional 100-level psychology courses. (Only 3 credits of Psyc 191 can be applied toward the major.)

Special Honors—To qualify for graduation with Special Honors the student must fulfill the general requirements stated under University Regulations, submit an application to the Psychology Department before the beginning of the student's senior year, take an honors seminar (Psyc 197) and a 200-level seminar, and complete an independent study project (Psyc 191 or

198) with distinction. The grade-point average in psychology required for graduation with Special Honors is 3.5.

Five-Year Bachelor of Arts with a major in psychology/Master of Arts in the field of art therapy—Students interested in this dual degree program should consult the director of the Art Therapy Program early in the junior year.

Minor in psychology—18 credit hours are required, including Psyc 1, 11, 12, 13, and at least two additional psychology courses other than Psyc 191 or 198. Students considering graduate study in psychology are advised to take Psyc 105 or 106, a distribution of courses from the categories listed under the major above, Psyc 196, and an elementary course in statistics.

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

Departmental prerequisite: Psyc 1 is prerequisite to all psychology courses.

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| 1 | General Psychology (3) | Staff |
| | Fundamental principles underlying human behavior. (Fall and spring) | |
| 11 | Abnormal Psychology (3) | Rohrbeck, Woodruff, Le |
| | Causes, diagnosis, treatment, and theories of various types of maladjustments and mental disorders. (Fall and spring) | |
| 12 | Social Psychology (3) | Moore, Dodge |
| | Social foundations of behavior: cognition, motivation, role behavior, communication, small-group processes, and attitudes. (Fall and spring) | |
| 13 | Developmental Psychology (3) | Ganiban and Staff |

Introduction to the study of human development; theory and research concerning changes in physical, cognitive, and social functioning and influences on the developing individual. (Fall and spring)

14 **Cognitive Psychology** (3) Philbeck

Introduction to the study of cognition; review of data and theories on the topics of perception, attention, memory, language, reasoning, and decision making.

15 **Biological Psychology** (3) Staff

Introduction to the biological basis of behavior; review of data and empirical methods on the topics of neural structure and function, brain damage, neuro-anatomy, genes, hormones and their influence on behavior.

101 **Psychology Research Methods** (3) Rohrbeck, Moore, Zucker

Survey of research designs (e.g., case studies, correlational designs, experiments), methods (e.g., questionnaires, observations), and measurement issues (e.g., reliability and validity). Prerequisite or corequisite: Stat 53. (Fall and spring)

105–6 **Principles and Methods of Psychology** (4–4) Dopkins, Philbeck

Lecture (3 hours), laboratory (3 hours). An experimental approach to understanding behavior; individual and class experiments performed. Psyc 105: visual sensation and perception. Psyc 106: sensation and perception in all modalities. Laboratory fee, \$30 per semester. (Academic year)

108 **Humanistic Psychology** (3) Schell

Critical examination of humanistic psychology. Emphasis on role of consciousness in human behavior. Philosophic foundations, existential, phenomenological, and transpersonal psychology. (Fall)

109 **The Psychological Study of Spirituality (3)** Schell

The complex interrelationship between psychology and spirituality: health and wellness; development of a spiritual life; psychological factors involved in spirituality; therapy and multicultural issues. Same as Rel 102. (Spring)

110 **Perception and Understanding in Children (3)** Abravanel

Concepts and research in the area of developmental psychology; emphasis on the growth and development of thinking, perceiving, and symbolic activity. (Spring)

112 **Psychology of Adolescence (3)** Ross-Kidder

Psychological characteristics and problems peculiar to adolescence, with emphasis on application of psychology to solution of such problems. Prerequisite: Psyc 13. (Fall or spring)

114 **Adult Development and Aging (3)** Staff

Psychological aging and development during the adult years, with an emphasis on theories of adult development and research on changes in cognitive functioning and social adjustment in early, middle, and later adulthood. Prerequisite: Psyc 13.

118 **Neuropsychology (3)** Rothblat

Analysis of neural processes underlying behavior. Basic structure and functions of the nervous system, with emphasis on sensory processes, learning and memory, motivation, and emotion. (Fall and spring)

119 **Group Dynamics (3)** Offermann

Relationship of the individual to groups, collectivities, and larger social systems. Theory, research, and applications of group and organizational processes. (Fall and spring)

121 **Memory and Cognition (3)** Philbeck, Sohn

An examination of the psychological processes underlying human memory and cognition. Topics cover theoretical and experimental issues involving a range of cognitive function from attention and pattern recognition to learning and memory. (Fall and spring)

125 **Cross-Cultural Psychology** (3) Zea

Introduction to the theory, methods, and research of cross-cultural psychology, with emphasis on immigrants and ethnic minorities in the United States and on other cultures. Prerequisite: Psyc 12 or 13. (Spring)

128 **Health Psychology** (3) Peterson, Moore

Current research in the area of health psychology, with special attention to psychological factors related to health and illness, psychological intervention with medical patients, and psychological approaches to illness prevention and health promotion. (Fall and spring)

129 **Theories of Personality** (3) Staff

Survey of personality theories; emphasis on their application to problems of individuals. (Fall and spring)

131 **Psychological Tests** (3) Staff

Survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee, \$25. (Fall and spring)

132 **Socialization in Childhood** (3) Ganiban

Examination of primary methods by which the child is shaped in terms of social judgment and self-control; internalization of controls, assimilation of societal values and parenting procedures. Organized by focus on issues according to developmental level.

144 **Industrial/Organizational Psychology** (3) Offermann, Vasilopoulos

Psychological concepts and methods applied to problems of personnel management, employee motivation and productivity, supervisory leadership, and organizational development. (Fall and spring)

150 **Psychology of Sex Differences (3)** Poppen

Relevant biological, psychological, and sociological influences on males and females in the development of sex differences; hormonal differences, gender identity, differential socialization of sons and daughters, masculinity/femininity, cultural evaluation of male and female roles. Survey of relevant psychological theory. Emphasis on empirical research and hypothesis testing. (Spring)

151 **Theory and Practice of Women's Leadership (3)** Offermann

Same as WLP 151.

152 **Women and Psychology (3)** Zucker

The psychology of women from a variety of perspectives (e.g., biological, cultural, social constructivist). Ways in which mainstream psychology is gendered; various feminist approaches to studying issues of gender in psychology. Same as WStu 152. (Fall)

154 **Psychology of Crime and Violence (3)** Staff

Examination of many psychological aspects of criminal behavior; personality of criminals and of psychological processes affecting behavior. (Fall and spring)

156 **Psychology of Attitudes and Public Opinion (3)** Poppen

Psychology of opinion formation, measurement of opinion, social determinants of attitudes, psychological processes in propaganda, bases of receptivity to propaganda, psychological warfare.

170 **Clinical Psychology (3)** Peterson, Gee

An exploration of the history, functions, and concerns of the clinical psychologist.

Assessment, treatment, community approaches, ethics. Prerequisite: Psyc 11.

188 **Attitudes Toward Death and Dying (3)** Woodruff

Exploration of the many different aspects, attitudes, and experiences associated with the process of death and dying. (Fall and spring)

191 **Independent Research (3)** Staff

Opportunity for work on individual library or experimental projects. Open to qualified students by permission; arrangements must be made with the sponsoring faculty member prior to registration. A list of participating faculty members and their research specialties is available from the Department. May be repeated twice for credit. Prerequisite: Psyc 101. (Fall and spring)

192 **Field Experience (3)** Abravanel

Senior psychology majors will spend a minimum of six hours a week in a local mental health, rehabilitation, school, or community setting. Students registering for this course must have weekly blocks of time available in their class schedules. (Fall and spring)

193 **Seminar in Industrial/Organizational Psychology (3)** Offermann, Vasilopoulos

Selected specialized topics in the field of psychology and work behavior, such as human ability and personality, decisions and risk behavior, organizational change, and leadership. May be repeated for credit. Prerequisite: Psyc 144 or permission of instructor.

196 **History and Systems of Psychology (3)** Staff

senior capstone course that includes a survey and integration of the major viewpoints and concepts of psychology. Required of psychology majors. (Fall and spring)

197 Honors Seminar (3)

Staff

elects topics in psychology that change each semester. Intended primarily for students in the Special Honors program in psychology. May be repeated once for credit.

Prerequisite: Psyc 101. (Fall and spring)

198 Current Research Issues (3)

Staff

conducted as a seminar. Recent experiments in psychology, including those performed by members of the class; emphasis on student participation. May be repeated once for credit. Prerequisite: Psyc 101.

199 Current Topics in Psychology (3)

Staff

topics vary. May be repeated for credit provided the topic differs.

PUBLIC ADMINISTRATION

Programs in public administration are offered at the graduate level by the School of Public Policy and Public Administration in Columbian College of Arts and Sciences. The course listed here is open to undergraduates.

117 Executive Branch Politics (3)

Staff

contemporary concepts and issues in public administration and management. Major

trends and approaches to governmental administration in the U.S., including the changing federal role, roles of the public sector in relation to the private sector, and managing public agencies at all levels. Same as PSc 117. (Fall and spring)

PUBLIC HEALTH

Undergraduate Program Committee: P. Sullivan (*Director*), C. Battle, J. Cawley, M. Edberg, D. Goldsmith, R. Riegelman, W. Schroth, J. Teitelbaum, S. Wilensky

See the School of Public Health and Health Services for the program of study leading to the Bachelor of Science with a major in public health. The following courses are also available to undergraduates in other schools and may be used toward a secondary field in public health.

Check with the SPHHS Student Services Office for any prerequisites that may apply.

101 Introduction to Public Health and Health Services (3)

Introduction to aspects of public health and health services, including health services administration and policy, maternal and child health, environmental health, and health promotion.

102 Biological Basis of Public Health (3)

Basic science principles of anatomy, physiology, and pathophysiology and their applications to public health.

103 Introduction to Preventive Medicine (3)

Introduction to the clinical science basis of preventive medicine, including nutrition,

infectious diseases, immunology, and human growth and development. Overview of the goals and methods used for disease prevention.

105 History and Philosophy of Public Health (3)

historical and philosophical development of public health and its contributions to understanding, preventing, and controlling disease and disabilities.

121 Principles of Health Education and Health Promotion (3)

Introduction to principles and concepts of health education and the role of the health educator in public health practice settings. Foundations of health promotion; communicating health concepts to the public, with a focus on strategies for developing health messages for specific populations.

132 Epidemiology: Measuring Health and Disease (3)

Principles of epidemiology applied to disease surveillance, control of infectious and chronic diseases, and health services/health policy. Understanding the basic research designs and their relationship to establishing cause and effect and effectiveness of interventions to prevent and cure disease.

170 Introduction to Pharmacology and Toxicology (3)

Basic principles underlying the absorption, distribution, metabolism, and excretion of toxic substances. Mechanisms of toxicity, including mutagenesis, carcinogenesis, and specific organ toxicity.

171 Introduction to Environmental–Occupational Health Sciences (2 or 3)

Introduction to principles of environmental and occupational health sciences, including principles of inorganic and organic chemistry.

172 Health and Environment (3)

Introduction to environmental and occupational health and implications for individual and population health. Issues of clean water, environmental toxins, air pollution, and the environmental impact on infectious diseases.

180 Introduction to Global Health and Development (3)

Basic concepts of development theory, international health policy, demographic trends, and health promotion; how the relationships between socioeconomic development and global health can be observed, measured, and used for the management of health programs.

181 Ecology, Health, and Social Development (3)

Survey of the relationship between health and development and environmental trends. Topics include deforestation, urban contamination, and desertification.

182 Health, Human Rights, and Displaced Persons (3)

Concepts of health as a human right, ethics, and the participation of the international community in moving toward health for all. Civil and international conflict in the generation of displaced populations.

183 Global Delivery of Health Systems (3)

Introduction to health systems and the basic concepts of health systems administration and financing and health care reform with examples from advanced, middle income, and poor countries.

184 International Public Health Practice (3)

Global challenges of new and re-emerging infectious diseases and the health of travelers.

Use of health information in the context of globalization and public health practice.

International aspects of medical and public health training.

185 Impact of Culture Upon Health (3)

Relationships between cultural values and the development of modern health systems based on Western models of health care practice. Reliance upon traditional forms of health care. Examples of successful incorporation of traditional practices into evolving health care systems.

190 Topics in Public Health (1 to 3)

Topics announced in the *Schedule of Classes*. May be repeated for credit provided the topic differs. Various offerings each semester.

191 Introduction to Health Policy (3)

An introduction to the fundamentals of the health care system in the United States and strategies available to policymakers when addressing problems relating to access, financing, and delivery of health care.

192 Introduction to Health Law (3)

Introduction to the legal concepts that underlie the health system, health care delivery, and health policy in the United States.

195 Case Studies in Public Health (3)

An interdisciplinary approach to understanding the complexities inherent in improving public health. Case studies examine the multiplicity of social factors that affect health and working models of approaches to alter them favorably.

199 Independent Study (1 to 3)

Admission by permission of instructor and program director.

RELIGION

University Professor S.H. Nasr

Professors H.E. Yeide, Jr., D.D. Wallace, Jr., A.J. Hildebeitel, P.B. Duff, R.J. Eisen (*Acting Chair*)

Assistant Professors T. Michael, K. Pemberton

Assistant Professorial Lecturers L.G. Berner, S.M. Glazer, B.N. Hebbbar, E.C. Hostetter

Bachelor of Arts with a major in religion—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Rel 1, 2.
3. Required courses in the major—30 credit hours, including at least 21 hours of upper-level courses. Twelve of these hours must be chosen from one religious tradition, such as Buddhism, Christianity, Hinduism, Islam, Judaism. Appropriate graduate seminars may be approved as substitutions for advanced-level courses. The program must include Rel 101 and at least one course each in Hebrew Scriptures and in New Testament.

Special Honors are awarded to students who meet the requirements stated under University Regulations, maintain a grade-point average of 3.4 in courses in the major, and complete an honors thesis by enrolling in Rel 191.

It is recommended that students include the study of foreign languages in their undergraduate program, including a language crucial to one of the religious traditions. All students expecting to enter graduate school are urged to study French or German.

Peace and National and International Systems—Econ 136, 181; Geog 120, 133; Hist 126, 129, 157, 184; PSc 140, 142, 144, 149.

With approval of the advisor, Selected Topics courses and 700 Series courses in related subjects may be counted toward the minor. An internship in a relevant agency (through SLP 152) may also count for 3 hours of credit, with advisor's prior approval.

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

Examination of the religions of the ancient Mediterranean and the major religions of the West. Religious foundations of Western civilizations. The development of Judaism, Christianity, and Islam and their confrontations with secularization and political upheaval in the modern world. (Fall and spring)

Examination of the major religions of the East and comparison with religions in the West.

Approaches to the cross-cultural study of religion. Hinduism, Buddhism, and the

religions of Tibet, China, and Japan are studied with respect to their history and their encounter with modernity. (Fall and spring)

9 **Bible: Hebrew Scriptures (3)** Duff

The literature, history, and religious thought represented by the Hebrew Scriptures (Old Testament). Continuities and contrasts between Israel and the ancient Near East are considered through study of the world view, oral and literary tradition, main religious ideas, and chief figures and movements of the biblical literature. (Fall and spring)

10 **Bible: New Testament (3)** Duff

Literature and history of earliest Christianity in the setting of the religious movements of the Greco-Roman world and developments within Judaism. The meaning of the earliest Christian proclamation about the significance of the life, teaching, and death of Jesus of Nazareth becomes the basis for tracing the formation and expansion of the Christian movement. (Fall and spring)

101 **Theories in the Study of Religion (3)** Yeide

Seminar taught jointly by the faculty of the Department of Religion. Analysis of different ways in which religious phenomena can be approached. Readings and discussion of some of the epoch-making books in the development of the study of religion. (Fall)

102 **The Psychological Study of Spirituality (3)** Staff

Same as Psyc 109.

103 **Biblical Issues (3)** Duff

Critical examination of a selected biblical topic or text.

104 **Jesus (3)** Duff

Comprehensive study of the life and teachings of Jesus with critical attention to sources.

Quest for the historical Jesus.

- 105 **Paul (3)** Duff

Backgrounds of early Christianity, first-century religious and social conditions affecting the spread of Christianity, the life and journeys of Paul, Paul's presentation of the Christian faith.

- 106 **Judaism (3)** Eisen

A survey of Jewish thought and practice from the biblical to the modern period; introduction to the Hebrew Bible, rabbinic Judaism, Jewish philosophy and mysticism, Judaism in the modern period; an examination of the central rituals in Judaism, including Sabbath, dietary laws, and major festivals. (Fall)

- 107 **Rabbinic Thought and Literature (3)** Eisen

The thought-world of rabbinic Judaism in its formative period, 100–500 CE, through a close reading of primary texts in translation selected from Mishnah, Talmud, and Midrash. Topics include Oral Torah, the mechanics of rabbinic law, conceptions of God, views on suffering. The influence of rabbinic Judaism on modern Jewish ethics and thought.

- 111 **Myth, Epic, and Novel (3)** Hildebeitel

Religious themes and images of the hero and their cultural significance in literature: e.g., Indo-European, Biblical, Babylonian narrative traditions; Greek epic and drama; Dante, Milton, Dostoevsky, Kafka, Hesse, Faulkner, Beckett.

- 112 **Jewish Mysticism (3)** Eisen

A historical treatment of the major forms of Jewish mysticism: the ecstatic schools of Merkavah mysticism, medieval German pietism, and Abraham Abulafia; the theosophic mysticism of medieval French and Spanish Kabbalah, Lurianic Kabbalah, and modern Hasidism; examination of major concepts, such as God, man, Israel, Torah, and redemption, as understood by these schools.

113 Second Temple/Hellenistic Judaism (3) Duff

History of Judaism from the time of Ezra through the destruction of Jerusalem in 70 CE—canonization of the Pentateuch, Hellenism, Maccabean revolt, growth of sectarian movements, Herod, ferment against Rome in context of Eastern and Western political currents. Use of primary sources, especially the Bible, Josephus, and noncanonical writings.

115 Jewish Philosophy in the Medieval Period (3) Eisen

An exploration of Jewish philosophical thinking from the close of the rabbinic period to the end of the Middle Ages through an analysis of four major philosophers—Saadia, Judah Halevi, Maimonides, and Gersonides. Topics include the nature of God, creation, divine providence, prophecy, and the rationale for the biblical commandments.

116 Modern Jewish Thought (3) Eisen

Jewish thought from 1800 to the present through an exploration of six preeminent Jewish theologians: Moses Mendelssohn, Hermann Cohen, Martin Buber, A.J. Heschel, J.B. Soloveitchik, and Mordecai Kaplan. The relationship between these thinkers and the major Jewish denominations: Orthodox, Conservative, Reform, and Reconstructionist.

117 Seminar: Issues in Jewish Thought (3) Eisen

In-depth exploration of a selected thinker or issue in Jewish thought. Recommended for students with academic background in the study of religion or Judaic studies.

118 **Women in Judaism** (3) Staff

Jewish women's spirituality as reflected in personal writings, ritual, liturgy, and midrash. Jewish women's history and legal status. Same as WStu 150.

120 **The Religions Wage Peace** (3) Yeide

Resources in various world religions that contribute to peacemaking in both interpersonal and political settings. Ways in which the religions have sponsored and/or tolerated violence.

121 **Ethics and the World Religions** (3) Yeide

Modern concepts of ethics and their relation to major world religions; religion as stimulus and barrier to moral change; modern moral issues and religious ethics.

122 **Christian Ethics and Modern Society** (3) Yeide

Nature and principles of Christian life as developed by the Christian community; problems of personal conduct; application to various social institutions.

123 **Issues in Jewish Ethics** (3) Staff

Exploration of current debates about major ethical issues among Jewish thinkers in the Orthodox, Conservative, and Reform denominations; issues in bioethics, feminism, attitudes towards non-Jews, social action, the ethics of war.

134 **The Holocaust in Theology and Literature** (3) Eisen, Ticktin

Theological and literary reactions of Jewish thinkers to the Holocaust; emphasis on evaluating contemporary responses to the Holocaust in light of attitudes toward suffering

in the classical Jewish tradition; readings include Fackenheim, Rubinstein, Wiesel, and Appelfeld.

143 **Christianity in the Ancient World (3)** Wallace

Rise and development of Christianity in relation to the culture, philosophy, mystery religions, and general religious life of the Greco-Roman world to A.D. 500.

144 **Medieval Faith and Symbolism (3)** Wallace

Christian life and thought in the Middle Ages; mystics, saints, popes, and philosophers.

145 **Religion in the Renaissance and Reformation (3)** Wallace

Transformation of the Western understanding of human identity and destiny from the end of the Middle Ages to the Age of Reason.

146 **Christianity in the Modern World (3)** Wallace

Changes in Christian life and thought since 1700, as seen in theology, literature, political life, and religious institutions.

151 **The Minor Religions of India (3)** Hebbar

The history, doctrines, and practices of Zoroastrianism, Jainism, Indian Judaism, Indian Christianity (Nestorian, Jacobite, Catholic, and Protestant), Indian Islam, and Sikhism.

152 **South Asian Buddhism (3)** Hebbar

The life of Buddha, the Buddhist Councils, doctrines of the schools of Hinayana Buddhism, philosophies of the schools of Indian Mahayana Buddhism, history of Buddhism in Sri Lanka, early history of Tibetan Buddhism, and the decline of Buddhism in India.

155 **Religion, Myth, and Magic (3)** Staff

Same as Anth 155.

- 156 **The Goddess in India and Beyond (3)** Hiltebeitel

The goddess traditions of Hinduism, with some attention to goddess traditions in the ancient Near East and the Mediterranean. Classical Sanskrit, Tantric, and popular expressions of Hindu goddess worship. Comparative studies and issues of gender.

- 157 **Indian Philosophy and Mysticism (3)** Hiltebeitel

Indian speculative and mystical traditions; late *Vedas*, *Upanishads*, *Bhagavad Gita*, Buddhist, and Hindu soteriological systems.

- 158 **Hinduism (3)** Hiltebeitel

Study of continuity and change in Hinduism, with emphasis on historical development and the consolidating features of the religion. Attention to relations between classical and popular living forms.

- 159 **Mythologies of India (3)** Hiltebeitel

The lore of Indian gods (Vedic, Puranic), heroes (epics), and holy men (Hindu, Buddhist, Jain, Tantric); ties with Indian art, caste, cult, cosmology, and spiritual ideals.

- 160 **Buddhism (3)** Hiltebeitel

Origin, development, and contemporary status of Buddhist life and thought; its impact on Asia.

- 161 **Islam (3)** Nasr

Origin, development, and contemporary status of Islamic life and thought; its impact on the Near East.

- 163 **Islamic Religion and Art (3)** Nasr

Investigation of major forms of Islamic art, such as calligraphy, architecture, and urban design; Quranic chanting, poetry, and music in relation to the principles of Islamic revelation. Same as AH 119.

164 **Islamic Philosophy and Theology (3)** Nasr

The major schools of Islamic philosophy and theology, considered in both a morphological and historical manner. The relation between revelation and reason, determination and free will, and divine and human knowledge as well as the relation among science, philosophy, and religion. The development of various schools of thought, from the classical period to the present.

165 **Sufism (Islamic Mysticism) (3)** Nasr

The foundation of Sufism in the Quranic revelation, its subsequent development, and its significance within Islamic civilization. Doctrines and practices of Sufism; history of the Sufi orders; Sufi literature, particularly in Arabic and Persian. The influence of Sufism upon social and political life and its state and role in the contemporary world, both Islamic and non-Islamic.

172 **Religion in the United States (3)** Wallace

Growth of religious groups and institutions in relation to American culture, development of religious thought, and analysis of the contemporary religious scene.

174 **American Judaism (3)** Staff

Religious thought and institutions with emphasis on contemporary Judaism. Mythic and ritual life of American Jews, including responses to Israel, diaspora, the Holocaust, family and community dynamics.

181 **Women in Western Religion (3)** Staff

Historical, theological, and ethical investigation of the image and role of women in Judaism and Christianity; special consideration of the Biblical experience, the sexual qualifications for religious office, use of male and female images and languages, and contemporary issues. Same as WStu 181.

182 **Religion and Philosophy in East Asia (3)** Michael

General introduction to the religions and philosophical tradition of China, Japan, and Korea. Same as EALL 182.

183 **Confucian Literature in East Asia (3)** Michael

General introduction to the Confucian traditions of literature, with an emphasis on history, historical writings, popular tales, and drama in China, Japan, and Korea. Same as EALL 183.

184 **Religion and Ethics in East Asia (3)** Michael

Introduction to the foundational traditions of ethics in China, Japan, and Korea, with an emphasis on their early origins and transformation in pre-modern and contemporary times. Same as EALL 184.

185 **Daoism in East Asia (3)** Michael

Study of the early history of the formation and development of Daoism, its growth into an institutionalized religious organization in China, and its role in the religious and philosophical history of Japan and Korea. Same as EALL 185.

186 **Shamanism in East Asia (3)** Michael

Introduction to the modern theories of Shamanism and the history and practice of Shamanism in China, Japan, and Korea. Same as EALL 186.

190 **Selected Topics (3)** Staff

Critical examination of religious phenomena rendered timely by current events or special resources. Topic announced in the *Schedule of Classes*. May be repeated for credit provided the topic differs.

191 **Senior Honors Thesis (3)** Staff

Required of and open only to undergraduate honors candidates in religion. (Fall and spring)

PEACE STUDIES

10 **Introduction to Peace Studies and Conflict Resolution (3)** Staff

Cross-disciplinary exploration of war and its causes; approaches to peace as a negative concept (absence of war) and as a positive concept (basis for long-range, harmonious relations in personal, social, and international life); exploration of nonviolent responses to conflict, violence, and war. (Fall)

190 **Peace Studies Project (3)** Staff

Individual project to integrate previous academic experience related to peace studies and a groundwork for possible future engagement with peace concerns through graduate work, career choice, or volunteer activities. To be taken in the semester when requirements for the minor are completed. Permission of instructor required.

ROMANCE, GERMAN, AND SLAVIC LANGUAGES AND LITERATURES

Professors I. Azar, J.F. Thibault, G. Ludlow (*Chair*)

Associate Professors G.P. Huvé, Y. Captain, I.R. Vergara, J.J. Hampton, E. Echeverria, C. Britt,

R. Robin, P. Rollberg, M.R. Gonglewski, M.B. Stein

Assistant Professors M. Ferretti, L. Chang, M. Belenky, S. Waisman, J. Brant, G. Shatalina, H.

Franz, L. Oukaderova, L.L. Westwater

Instructor A. Serrano-Ripoll

Bachelor of Arts with a major in French language and literature—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Fren 1, 2, 3, 4, 9, 10, 30, or equivalent.
3. Required for the major—30 credit hours consisting of two courses selected from Fren 53, 54, 90; six 100-level courses in French, with at least four in literature, distributed as indicated immediately below; and, in the senior year, Fren 198–99 and a comprehensive examination. The six 100-level courses must include one in literature before 1700 (chosen from Fren 120, 121, 122), two in literature since 1700 (chosen from Fren 123, 124, 125), and three chosen from among all 100-level French courses, with at least one in literature.

Bachelor of Arts with a major in Hispanic languages and literatures—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Span 1, 2, 3, 4, 9, 10, 30, or equivalent.
3. Required for the major—30 credit hours consisting of two courses selected from Span 53, 54, 90; six 100-level courses in Spanish, with at least four in literature, distributed as indicated immediately below; and, in the senior year, Span 198–99 and a comprehensive examination. The six 100-level courses must include two in literature before 1800 (chosen from Span 120, 121, 122, 123, 124, 149), two in literature since 1800 (Span 125, 126, 130, 131, 132, 140, 145, 146, 147, 148, 150), and two chosen from among all 100-level Spanish courses.

Bachelor of Arts with a major in German language and literature—The following requirements must be fulfilled.

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Ger 5–6 (or Ger 1–2, 3–4).
3. Required courses in the major—Ger 9–10, 109–10; two courses chosen from Ger 91–92 or 161–62; two courses chosen from Ger 111, 161–62 (if not taken above), 165, or the 180s series; four courses chosen from the Ger 170s series.

Bachelor of Arts with a major in Russian language and literature—The following requirements must be fulfilled.

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Slav 5–6 (or Slav 1–2, 3–4) and Slav 91–92.
3. Required courses in the major—Slav 9–10, 109–10, 161, and 162; two courses chosen from Slav 171, 172, 173, 174; two courses chosen from Slav 165, 166, 185, 186.

Proficiency requirements for the Russian major: By the end of Slav 11, students consult their advisor to choose one of two proficiency tracks: (1) Emphasis on proficiency in speaking. Students choosing this track must attain speaking proficiency at the Intermediate High level, as measured by the ACTFL Oral Proficiency Interview. A semester of intensive language study in Russia on an approved program is required unless waived by the department. (2) Emphasis on proficiency in reading. Students choosing this track must attain reading proficiency at the Advanced level on the ACTFL scale, as measured by a departmental examination. Slav 101–2 is required, unless waived by the Department.

Special Honors in French or Hispanic languages and literatures—In addition to the general requirements stated under University Regulations, a candidate for special honors in French or Hispanic languages and literatures must have attained a 3.75 GPA in the major and at least a 3.0 average overall. Qualified students should consult their major advisor and proseminar professor

by the beginning of the fall semester of the senior year to indicate their intention to write an honors thesis.

Special Honors in German or Russian languages and literatures—In addition to the general requirements stated under University Regulations, a candidate for special honors must have attained a 3.5 grade-point average in the major and at least a 3.0 average overall. Students must apply for honors candidacy by the end of the first semester of the junior year, must attain speaking proficiency at the Advanced level, as measured by the ACTFL Oral Proficiency Interview, and must successfully complete an honors thesis (Ger or Slav 197–98).

Minor in French or Hispanic languages and literatures—Required: 21 credit hours in one of the two fields, consisting of three courses chosen from Fren/Span 30, 53, 54, 90; four additional courses selected from among French/Spanish courses numbered 9 and above, including at least two at the 100 level.

Minor in German language and literature—Ger 1–2, 3–4 (or 5–6); Ger 9–10 (or 101–2); two courses chosen from Ger 91–92, 109–10, or 161–62; two additional 100-level German courses (excluding Ger 101–2).

Minor in Russian language and literature—Slav 1–2 and 3–4 (or 5–6), 9–10 (or 101–2), and four courses chosen from Slav 91–92, 161, 162, 165, 166, 171, 172, 173, 174, 185, 186.

Minor in Italian language and literature—Required: 21 credit hours consisting of Ital 9, 10, 30, 53, 54, 120, 131.

Placement Examinations: A student who has not been granted advanced standing and who wishes to continue in college the language begun in high school must take a placement examination before registration. Upon completion of the examination, assignment is made to the appropriate course.

Departmental prerequisites: Prerequisites are listed with each Romance language course up to 110; courses numbered 120 and higher have prerequisites of two courses from 53, 54, 90, or approval of the instructor. Completion of Ger 109 or 110 is prerequisite to courses in the Ger 170s series.

Note: In general, Romance language courses are conducted entirely in the language concerned. Aural comprehension, speaking, reading, and writing are the basis of all courses through Fren/Ital/Port/Span 10, with culture integrated from the start as an essential dimension of language acquisition.

FRENCH

1 **Basic French I (4)** Staff

Handling the immediate context of daily experience in spoken and written French: identifying, describing, and characterizing people, objects, places, and events; giving information and instructions; issuing simple commands and requests. Laboratory fee, \$50. (Fall, spring, and summer)

2 **Basic French II (4)** Staff

Speaking and writing in French about past and future events: telling a story (narrating and describing in the past), promising, predicting, and proposing simple hypotheses and conjectures. Prerequisite: Fren 1 or equivalent. Laboratory fee, \$50. (Fall, spring, and summer)

3 **Intermediate French I (3)** Brant and Staff

Increasing active vocabulary, reinforcing mastery of basic grammar, dealing with more complex structures (verbal phrases, subordinate clauses), and using some patterns of

indirect speech (e.g., repeating or relaying messages, giving reports, summarizing).

Prerequisite: Fren 2 or equivalent. Laboratory fee, \$50. (Fall, spring, and summer)

4 **Intermediate French II (3)** Brant and Staff

Consolidation and further expansion of the ability to understand as well as produce a more complex level of oral and written discourse emphasizing subjective expression: issuing indirect commands and requests; giving opinions; making proposals, building arguments; defending and criticizing ideas. Prerequisite: Fren 3 or equivalent. Laboratory fee, \$50. (Fall, spring, and summer)

9 **Language, Culture, and Society I (3)** Huvé and Staff

Development of strong conversational skills and the rudiments of expository writing. The vocabulary and structures necessary to move from handling everyday experience and subjective expression to the exposition of more abstract thought and ideas and discussion of political, social, and cultural issues. Prerequisite: Fren 4. Laboratory fee, \$50. (Fall, spring, and summer)

10 **Language, Culture, and Society II (3)** Huvé and Staff

Continued expansion of the range and complexity of conversational skills and further development of the writing of effective expository prose on a broad range of subjects. Short literary texts serve as the basis for oral discussion, analytical reading, and writing brief critical essays. Prerequisite: Fren 9. Laboratory fee, \$50. (Fall, spring, and summer)

20 **French Pronunciation (3)** Huvé

The sounds of French. Oral readings, presentations, recitation. Poetry, scenes from plays.

Emphasis on phonetics and diction, with attention to accent, rhythm, and intonation.

Prerequisite: Fren 10. Laboratory fee, \$50. (Spring)

30 **Introduction to French Literature (3)** Belenky, Brant, Chang

Readings, textual analysis, and writing on a broad selection of texts from different genres and periods. French and Francophone literatures in their cultural contexts. Close reading approach and introduction to literary vocabulary. Prerequisite: Fren 10. (Fall and spring)

49 **French for Graduate Students (0)** Staff

For graduate students preparing for reading examinations. No academic credit. Tuition is charged at the rate of 3 credit hours. (Fall, spring, and summer)

53 **Medieval and Early Modern French Literature in Context (3)** Chang and Staff

Texts of the Middle Ages to the 17th century studied in their historical, social, and cultural contexts. Topics may include feudal society and the literature of courtly love; humanism, Rabelais, and Renaissance poetry; women and salon writing; Versailles, absolutism, and classical theater. Prerequisite: Fren 30 or equivalent. (Fall)

54 **Modern French Literature in Context (3)** Ludlow and Staff

Texts of the 18th century to the present in historical, social, and cultural contexts. Topics may include *philosophes* and the rise of social consciousness; the French Revolution and Romanticism; dada and surrealism; existentialism and World War II; decolonization and francophone literature. Prerequisite: Fren 30 or equivalent. (Spring)

56 **Topics in French and Francophone Literatures and Cultures in Translation (3)**

Ludlow, Belenky, Thibault, Chang

Dynamics of French-speaking societies and their cultures studied through literature, art, or film. Topics vary. Readings and lectures in English. The course may be repeated for credit. A laboratory fee may be required. (Spring)

90 **Textual Analysis (3)** Thibault and Staff

Methodology and vocabulary of literary criticism. Application of various principles of textual analysis and critical approaches to literature. Prerequisite: Fren 30 or equivalent. (Spring)

108 **Advanced French Grammar and Style (3)** Brant and Staff

Composition, drills, dictations. Translations into French. Study of vocabulary and syntax, with emphasis on stylistic devices. Prerequisite: Fren 10. (Fall)

109 **Contemporary France (3)** Huvé and Staff

Emphasis on advanced oral work. Discussion of French culture and civilization, based on contemporary writings and video documents. Prerequisite: Fren 10. Laboratory fee, \$50. (Fall)

110 **Business and Commercial French (3)** Huvé

Structure and language of French economic institutions. Discussion of legal, financial, and administrative documents. Oral and written reports. Preparation for the certificate of the Paris Chamber of Commerce. Prerequisite: Fren 10. (Spring)

120 **Studies in Medieval French Literature (3)** Chang

Readings and analysis of the major literary texts from the 11th through 15th centuries. Chansons de geste, courtly literature, fabliaux, drama, lyric and didactic poetry.

121 **French Literature of the Renaissance (3)** Chang

Sixteenth-century prose and poetry in the context of cultural and historical movements.

Topics may include humanism; concepts of self and subjectivity; the wars of religion; the discovery of the New World; court and city life; the private and public spheres; religious and secular love. (Fall, alternate years)

122 **The Age of Classicism (3)** Ludlow

Drama, philosophy, criticism, poetry, and fiction of the 17th century. Topics may include *préciosité*, baroque, Jansenism, classicism, and rationalism in the context of the major social, political, and religious movements of the period. (Spring, alternate years)

123 **The Age of Enlightenment (3)** Ludlow

The major novelists, dramatists, and *philosophes* of the 18th century. The works of Montesquieu, Voltaire, Rousseau, and Diderot and their relationship to the social, political, and philosophical thought of the period. (Fall, alternate years)

124 **19th-Century French Literature and Culture (3)** Belenky

Key aspects of 19th-century French literature in its historical, cultural, and political context. Major authors and literary movements are studied through the lens of a particular theme, which varies from year to year. (Fall, alternate years)

125 **Studies in 20th-Century French Literature (3)** Thibault

Major literary movements of the 20th century: avant-garde, surrealism, existentialism, *nouveau roman*, and *nouveau théâtre*. (Spring)

130 **Studies in Genre (3)** Thibault, Ludlow, Chang, Belenky

Study in narrative, dramatic, or lyric form. Topics vary. May be repeated for credit. (Spring)

131 **Topics in the History of French Cinema (3)** Thibault

French cinema from its inception to the “New Wave.” The relationship of filmmaking and audience reception to the evolution of French society and political institutions. The language of cinema as it evolves according to periods and genres and as critics and filmmakers create a theoretical discourse specific to film. Laboratory fee, \$30. (Spring)

132 **Topics in 20th-Century Francophone Literature and Cinema** (3) Ludlow

Analysis of relations between France and its former colonies as manifested in the literature and cinema of France and the Francophone world. Race and gender relations; exile; nationalism; and identity and place as seen through various literary and cinematic responses to the discourses of metropolitan France by its former colonies. Laboratory fee, \$30. (Fall, alternate years)

133–34 **Special Topics in French Literature** (3–3) Staff

May be repeated for credit provided the topic differs.

140 **Writing Women** (3) Belenky, Chang

Dynamics of gender in French literature and culture with emphasis on women as agents and objects of representation. Gender roles in the formation of social biases, norms, and power structures. Texts range from the Middle Ages to the present. (Fall, alternate years)

197 **Independent Study** (arr.) Staff

Admission by permission of department chair and instructor. May be repeated for credit.

198–99 **Proseminar** (3–3) Thibault and Staff

Required of all majors; preparation for the major field examination. Literature in relation to the other arts and the social sciences. Fren 198: textual analysis, literary criticism,

theory, and methods. Fren 199: the concepts of literary history and the history of French literature; periods, authors, genres, topics. (Academic year)

GERMAN LANGUAGE AND LITERATURE

1–2 **First-Year Basic German (4–4)** Gonglewski and Staff

First part of beginning course in fundamentals of speaking, understanding, reading, and writing German. Prerequisite to Ger 2: Ger 1. Laboratory fee, \$50 per semester. (Academic year)

3–4 **Second-Year Basic German (4–4)** Gonglewski and Staff

Second half of beginning course in fundamentals of speaking, understanding, reading, and writing German. Prerequisite to Ger 3: Ger 2 or equivalent. Prerequisite to Ger 4: Ger 3. Laboratory fee, \$50 per semester. (Academic year)

5–6 **Intensive Basic German (8–8)** Gonglewski and Staff

Beginning intensive course in fundamentals of speaking, understanding, reading, and writing German (equivalent to Ger 1–2 and 3–4). Recommended for majors. Prerequisite to Ger 6: Ger 2 or 5 or equivalent. Laboratory fee, \$70 per semester. (Academic year)

9–10 **Intermediate German (3–3)** Franz and Staff

Practice in speaking, listening, reading, and writing at the intermediate level.

Prerequisite: Ger 4 or 6 or permission of instructor. (Academic year)

91–92 **Introduction to German Literature—in English (3–3)** Stein and Staff

Ger 91: Survey of German literature 1700–1830, including the Enlightenment through *Sturm und Drang*, classicism, and romanticism. Ger 92: Survey of German literature 1830–1950, including Young Germany through realism, naturalism, expressionism, and

the literature of the Third Reich years (exile literature and inner emigration). (Academic year)

101–2 Readings in Contemporary German (3–3) Staff

Analysis of representative readings of expository prose from German newspapers, periodicals, and other publications. Prerequisite: for Ger 101, Ger 4 or 6 or equivalent; for Ger 102, Ger 101. (Academic year)

109–10 Introduction to German Studies (3–3) Stein and Staff

An introduction to approaches, concepts, and analytical tools for study in the field, complemented by advanced practice in speaking, listening, reading, and writing. Prerequisite: Ger 10 or permission of instructor. (Academic year)

111 Business German (3) Gonglewski, Franz

Introductory course preparing students to function in business-related communicative situations, with an emphasis on language skills necessary for work in areas such as marketing and finance. Prerequisite: Ger 10 or permission of instructor. (Spring)

161–62 German Culture—in English (3–3) Stein and Staff

The central problems, issues, and events that have shaped the development of German culture from antiquity to the present. Emphasis on products and processes of German culture in social, historical, and political contexts. (Academic year)

165 20th-Century German Literature—in English (3) Stein and Staff

Survey of the major trends in the works by modernist, exile, postwar, and contemporary German writers such as Kafka, Thomas Mann, Duerrenmatt, and Grass. (Fall)

171 The Age of Goethe—in German (3) Staff

Readings of major works of Weimar classicism in their historical and cultural context.

- 172 **From Romanticism to Realism—in German (3)** Stein and Staff

Readings in German romanticism, literature of the “young Germany” movement (Heine), and realism (Fontane, Storm).

- 173 **From Naturalism to Expressionism—in German (3)** Stein

Study of various literary movements between 1880 and 1914: naturalism, impressionism, symbolism, and expressionism (Hauptmann, Hesse, Thomas Mann, Kafka).

- 174 **Inside and Outside the Third Reich—in German (3)** Staff

Analysis of literary developments inside the Nazi state (propaganda literature, literature of resistance, and inner immigration) and the literature of exile (Seghers, Remarque).

- 175 **Literature of Two Germanies—in German (3)** Stein

Evolution of East and West German literatures after World War II, their separate developments and ultimate unification.

- 181 **History of German Cinema—in English (3)** Rollberg and Staff

A detailed historical and cultural survey of German cinema from the first moving picture devices (1895) to the expressionistic classics of the 1920s and the collapse of the Nazi film industry in 1945. All films are subtitled.

- 182 **The Fairy Tale from the Grimms to Disney—in English (3)** Stein

Survey of the changing form, structure, and meaning of the fairy tale in its traditional contexts, modern transformations and critical interpretations, with readings by 19th-century European collectors and 20th-century critics.

- 183 **Berlin Before and After the Wall—in English (3)** Stein

The political, social, and cultural developments in Berlin from 1945 to the present through a reading of selected primary documents, historical analyses, and short literary texts.

184 **German Thought—in English (3)** Staff

An overview of German ideas about culture, religion, society, and politics from the 16th century to the present. Readings from such writers as Luther, Leibniz, Kant, Schiller, Hegel, Marx, Nietzsche, Freud, Weber, Heidegger, Adorno, and Habermas.

185 **Literary Voices and the Fascist Experience—in English (3)** Staff

A survey of writers anticipating as well as reflecting on Germany's plunge into the totalitarian abyss of fascist politics, including H. Mann, Kafka, Juenger, Brecht, Werfel, Thomas Mann, Lenz, Frisch, Duerrenmatt, and various forms of Holocaust poetry.

186 **German Women Writers of the 19th and 20th Centuries (3)** Staff

The changing literary and social roles of German women of the 19th and 20th centuries, examined through selected readings of women's literary production and culture.

195 **Special Topics (3)** Staff

Directed study of German language, literature, or culture. May be repeated for credit. Students must obtain chair's approval and arrange for supervision by an appropriate member of the department. (Fall and spring)

197–98 **Senior Honors Thesis (3–3)** Staff

Senior honors thesis on a topic related to German language, literature, or culture.

Required of and open only to honors candidates in the department. (Academic year)

ITALIAN

1 **Basic Italian I (4)** Ferretti and Staff

Handling the immediate context of daily experience in spoken and written Italian: identifying, describing, and characterizing people, objects, places, and events; giving information and instructions; issuing simple commands and requests. Laboratory fee, \$50. (Fall, spring, and summer)

2 **Basic Italian II (4)** Ferretti and Staff

Speaking and writing in Italian about past and future events: telling a story (narrating and describing in the past), promising, predicting, and proposing simple hypotheses and conjectures. Prerequisite: Ital 1 or equivalent. Laboratory fee, \$50. (Fall, spring, and summer)

3 **Intermediate Italian I (3)** Ferretti and Staff

Increasing active vocabulary, reinforcing mastery of basic grammar, dealing with more complex structures (verbal phrases, subordinate clauses), and using some patterns of indirect speech (repeating or relaying messages, giving reports, summarizing).

Prerequisite: Ital 2 or equivalent. Laboratory fee, \$50. (Fall)

4 **Intermediate Italian II (3)** Ferretti and Staff

Consolidation and further expansion of the ability to understand as well as produce a more complex level of oral and written discourse emphasizing subjective expression: issuing indirect commands and requests; giving opinions; making proposals, building arguments; defending and criticizing ideas. Prerequisite: Ital 3 or equivalent. Laboratory fee, \$50. (Spring)

9 **Language, Culture, and Society I (3)** Ferretti and Staff

Development of strong conversational skills and the rudiments of expository writing. The vocabulary and structures necessary to move from handling everyday experience and

subjective expression to the exposition of more abstract thought and ideas and discussion of political, social, and cultural issues. Prerequisite: Ital 4. Laboratory fee, \$50.

10 **Language, Culture, and Society II (3)** Ferretti and Staff

Continued expansion of the range and complexity of conversational skills and further development of the writing of effective expository prose on a broad range of subjects.

Short literary texts serve as the basis for oral discussion, analytical reading, and writing brief critical essays. Prerequisite: Ital 9. Laboratory fee, \$50.

30 **Introduction to Italian Literature (3)** Ferretti

Readings, textual analysis, and writing on a broad selection of texts from different genres and periods. Emphasis on study of Italian literature in its cultural context. Close reading approach and introduction to literary vocabulary. Prerequisite: Ital 10 or equivalent. (Fall)

53 **History of Italian Literature from the Middle Ages Through the 17th Century (3)**

Ferretti and Staff

Lecture and discussion in Italian. Development of genre and movements. Selected readings across these periods plus reading of complete texts of epics, essays, novels, and plays. Prerequisite: Ital 10 or equivalent. (Fall)

54 **History of Italian Literature from the 18th Through the 20th Century (3)** Ferretti

Lecture and discussion in Italian. Philosophical and literary movements of the modern period. Selected readings across the period plus the reading of complete texts of novels and drama. Prerequisite: Ital 10 or equivalent. (Spring)

56 **Italian Literature and Culture in Translation (3)** Staff

Dynamics of Italian-speaking societies and their cultures studied through literature, art, or film. Topics vary. Readings and lectures in English. The course may be repeated for credit. A laboratory fee may be required. (Fall)

90 **Textual Analysis (3)** Ferretti

Close examination of critical methods and vocabulary used in literary study as applied to Italian Literature. Attention to linguistic and stylistic difficulties in textual analysis.

Prerequisite: Ital 30 or equivalent. (Spring)

108 **Advanced Italian Grammar and Style (3)** Ferretti

Compositions, drills, dictations. Translations into Italian. Study of vocabulary and syntax with emphasis on stylistic devices. Prerequisite: Ital 10. (Fall)

120 **Studies in Medieval and Early Renaissance Literature (3)** Ferretti, Westwater

Works by Dante, Petrarca, and Boccaccio. Emphasis on structure, rhetorical features, and problems of narrative organization. Specific attention to historical and ideological aspects of the works as well as to cultural influence. Prerequisite: Ital 90 or equivalent.

131 **The Italian Novel (3)** Ferretti and Staff

A reading of the most important Italian novelists of the 19th and the 20th centuries: Manzoni, Verga, Bassani, Calvino, Eco, Sanguinetti. Study of the relations of each work to its social and cultural context and to the novel as a genre. Prerequisite: Ital 90 or equivalent.

197 **Independent Study (arr.)** Staff

Admission by permission of department chair and instructor. May be repeated for credit.

PORTUGUESE

1 **Basic Portuguese I (4)** Byrnes

Handling the immediate context of daily experience in spoken and written Portuguese: identifying, describing, and characterizing people, objects, places, and events; giving information and instructions; issuing simple commands and requests. Laboratory fee, \$50. (Fall)

2 **Basic Portuguese II (4)** Byrnes

Speaking and writing in Portuguese about past and future events: telling a story (narrating and describing in the past), promising, predicting, and proposing simple hypotheses and conjectures. Prerequisite: Port 1 or equivalent. Laboratory fee, \$50. (Spring)

3 **Intermediate Portuguese I (3)** Byrnes

Increasing active vocabulary, reinforcing mastery of basic grammar, dealing with more complex structures (verbal phrases, subordinate clauses), and using some patterns of indirect speech (repeating or relaying messages, giving reports, summarizing).

Prerequisite: Port 2 or equivalent. Laboratory fee, \$50. (Fall)

4 **Intermediate Portuguese II (3)** Byrnes

Consolidation and further expansion of the ability to understand as well as produce a more complex level of oral and written discourse emphasizing subjective expression: issuing indirect commands and requests; giving opinions; making proposals, building arguments; defending and criticizing ideas. Prerequisite: Port 3 or equivalent. Laboratory fee, \$50. (Spring)

8 **Portuguese for Spanish Speakers (3)** Byrnes

An intensive course designed for speakers of Spanish to develop competence quickly in spoken and written Portuguese. Laboratory fee, \$50. (Spring)

9 **Language, Culture and Society I (3)** Byrnes

Development of strong conversational skills and the rudiments of expository writing. The vocabulary and structures necessary to move from handling everyday experience and subjective expression to the exposition of more abstract thought and ideas and discussion of political, social, and cultural issues. Prerequisite: Port 4. Laboratory fee, \$50. (Fall)

SLAVIC LANGUAGES AND LITERATURES

1–2 First-Year Basic Russian (4–4) Shatalina and Staff

First part of beginning course in fundamentals of speaking, understanding, reading, and writing Russian. Prerequisite to Slav 2: Slav 1. Laboratory fee, \$50 per semester. (Academic year)

3–4 Second-Year Basic Russian (4–4) Shatalina and Staff

Second half of beginning course in fundamentals of speaking, understanding, reading, and writing Russian. Prerequisite to Slav 3: Slav 2 or equivalent. Prerequisite to Slav 4: Slav 3. Laboratory fee, \$50 per semester. (Academic year)

5–6 Intensive Basic Russian (8–8) Robin and Staff

Beginning intensive course in fundamentals of speaking, understanding, reading, and writing Russian (equivalent to Slav 1–2 and 3–4). Recommended for majors. Prerequisite to Slav 6: Slav 2 or 5 or equivalent. Laboratory fee, \$70 per semester. (Academic year)

9–10 Intermediate Russian (5–5) Shatalina and Staff

Practice in speaking, listening, reading, and writing at the intermediate level.

Prerequisite: Slav 4 or 6 or permission of instructor. (Academic year)

13–14 Russian for Heritage Speakers (3–3) Guslistova

Prepares heritage speakers of Russian for advanced study in Russian at the third-year level and beyond, including content courses in literature and area studies. (Academic year)

21–22 **Basic Czech (3–3)** Staff

Beginning course in fundamentals of speaking, understanding, reading, and writing Czech. Prerequisite to Slav 22: Slav 21 or equivalent. Laboratory fee, \$50 per semester. (Offered when the demand warrants)

23–24 **Second-Year Basic Czech (3–3)** Staff

Second half of beginning course in fundamentals of speaking, understanding, reading, and writing Czech. Prerequisite to Slav 23: Slav 22; prerequisite to Slav 24: Slav 23. (Offered when the demand warrants)

31–32 **Basic Polish (3–3)** Staff

Beginning course in fundamentals of speaking, understanding, reading, and writing Polish. Prerequisite to Slav 32: Slav 31. (Offered when the demand warrants)

33–34 **Intermediate Polish (3–3)** Staff

Practice in speaking, listening, reading, and writing at the intermediate level. Prerequisite: Slav 32. (Offered when the demand warrants)

41–42 **Ukrainian Language and Culture (3–3)** Staff

Introduction to Ukrainian language, culture, and history. (Offered when the demand warrants)

91–92 **Introduction to 19th-Century Russian Literature—in English (3–3)** Rollberg

Slav 91: Russian literature and society, 1800–1860s, concentrating on the Golden Age of Russian literature; poems and stories by Pushkin, Lermontov, Gogol, and Turgenev. Slav

92: Russian literature and society on their way to modernity; great works of prose and drama by Dostoevsky, Tolstoy, Chekhov, and Bunin. (Academic year)

101–2 **Readings in the Russian Press (3–3)** Guslistova

Reading and analysis of current Russian periodicals. For departmental majors and graduate students with a reading-language proficiency requirement.

109–10 **Russia Today: Topics in Advanced Russian (3–3)** Staff

Practice in speaking, listening, reading, and writing at the advanced level. Prerequisite: Slav 10 or 12 or permission of instructor. (Academic year)

161 **Russian Culture to 1825 (3)** Staff

Survey of Russian cultural heritage from its ancient origins through the early 19th century. Architecture from the medieval period through the end of the Empire style. Iconography, the influence of the Church, and effects of the West on Russian culture.

162 **Russian Culture since 1825 (3)** Staff

Survey of Russian culture from the 19th century through the present, including intellectual movements; realism in music, art, and theatre; ballet; avant-garde painting; and effects of Soviet policies and of Perestroika.

165 **20th-Century Russian Literature to World War II (3)** Staff

Russian literature and culture of the first half of the 20th century: the impact of the revolution on writers and literature; avant-garde, socialist realism, and emigre literature (Nabokov)—in English.

166 **Russian Literature from World War II to the Present (3)** Staff

Literature in wartime and in postwar years from Solzhenitsyn to the latest trends: the “thaws,” village and urban prose, post-Soviet literature, Russian postmodernism—in English.

171 **19th-Century Russian Prose (3)** Rollberg

Reading and discussion of selected prose texts of the 19th century from Pushkin to Chekhov—in Russian. Prerequisite: Slav 10 or 12 or equivalent; Slav 91–92. (Fall, even years)

172 **19th-Century Russian Poetry (3)** Rollberg

Reading and discussion of selected poetry of the 19th century (Pushkin, Lermontov, Nekrasov, and others)—in Russian. (Spring, odd years)

173 **20th-Century Russian Prose (3)** Rollberg

Reading and discussion of selected prose of the 20th century from Bunin to Solzhenitsyn—in Russian. (Fall, odd years)

174 **20th-Century Russian Poetry (3)** Rollberg

Reading and discussion of selected poetry of the 20th century from Blok to Brodsky—in Russian. Prerequisite: Slav 10 or 12 or equivalent; Slav 165, 166. (Spring, even years)

185–86 **Introduction to Russian Cinema (3–3)** Rollberg

(In English; all films subtitled.) Slav 185: From Russian silents to the introduction of sound and color (1896–1946). The great revolutionary directors—Eisenstein, Pudovkin, Dovzhenko. Slav 186: From post-war to post-perestroika cinema (since 1946): war films, adventure, films about youth.

195 **Special Topics (3)** Staff

Directed study of East European languages, literatures, or cultures. May be repeated for credit. Students must obtain chair's approval and arrange for supervision by an appropriate member of the department. Prerequisite for Russian: Slav 9–10 or 11–12, 91–92, 165, 166.

197–98 **Senior Honors Thesis** (3–3)

Staff

Senior honors thesis on a topic related to Russian language, literature, or culture.

Required of and open only to honors candidates in the department.

SPANISH

1 **Basic Spanish I** (4)

Echeverria and Staff

Handling the immediate context of daily experience in spoken and written Spanish: identifying, describing, and characterizing people, objects, places, and events; giving information and instructions; issuing simple commands and requests. Laboratory fee, \$50. (Fall, spring, and summer)

2 **Basic Spanish II** (4)

Echeverria and Staff

Speaking and writing in Spanish about past and future events: telling a story (narrating and describing in the past), promising, predicting, and proposing simple hypotheses and conjectures. Prerequisite: Span 1 or equivalent. Laboratory fee, \$50. (Fall, spring, and summer)

3 **Intermediate Spanish I** (3)

Serrano-Ripoll and Staff

Increasing active vocabulary, reinforcing mastery of basic grammar, dealing with more complex structures (verbal phrases, subordinate clauses), and using some patterns of indirect speech (repeating or relaying messages, giving reports, summarizing). Prerequisite: Span 2 or equivalent. Laboratory fee, \$50. (Fall, spring, and summer)

Readings, textual analysis, and writing on a broad selection of texts from different genres and periods. Hispanic literatures in their cultural contexts. Close reading approach and introduction to literary vocabulary. Prerequisite: Span 10. (Fall and spring)

49 **Spanish for Graduate Students (0)** Staff

For graduate students preparing for reading examinations. No academic credit. Tuition is charged at the rate of 3 credit hours. (Fall, spring, and summer)

53 **Epic and Satire (3)** Britt, Hampton, Vergara

The historical, cultural, and political ties between Spain and Latin America and their representation in epic and satiric modes of imaginative literature as developed in drama, poetry, and prose. Lecture and discussion in Spanish. Prerequisite: Span 30 or equivalent. (Fall)

54 **Tragedy and Comedy (3)** Britt, Hampton, Vergara

The historical, cultural, and political ties between Spain and Latin America and their representation in tragic and comic modes of imaginative literature as developed in drama, poetry, and prose. Lecture and discussion in Spanish. Prerequisite: Span 30 or equivalent. (Spring)

56 **Topics in Hispanic Literatures and Cultures in Translation (3)** Hampton, Britt, Waisman

Dynamics of Hispanic societies and their cultures studied through literature, art, or film. Topics vary. Readings and lectures in English. The course may be repeated for credit. Laboratory fee may be required. (Fall and spring, alternate years)

90 **Textual Analysis (3)** Vergara and Staff

Methodology and vocabulary of literary criticism. Application of various principles of textual analysis and critical approaches to literature. Prerequisite: Span 30 or equivalent. (Fall and spring)

- 108 **Advanced Spanish Grammar and Style (3)** Echeverria, Serrano-Ripoll, Staff
Composition, drills, dictations. Translations into Spanish. Study of vocabulary and syntax, with emphasis on stylistic devices. Prerequisite: Span 10. (Fall and spring)

- 109 **Contemporary Spain and Latin America (3)** Echeverria and Staff
Emphasis on advanced oral work. Discussion of Hispanic culture and civilization, based on contemporary writings and video documents. Laboratory fee, \$50. Prerequisite: Span 10. (Fall and spring)

- 110 **Business and Commercial Spanish (3)** Echeverria and Staff
Structure and language of Latin American and Spanish economic institutions. Discussion of legal, financial, and administrative documents. Oral and written reports. Prerequisite: Span 10. (Spring)

- 120 **Studies in Medieval Spanish Literature (3)** Azar
Reading and analysis of the major literary texts from the 11th through the 15th century. Attention paid to linguistic aspects of Old Spanish.

- 121 **Studies in Golden Age Literature (3)** Azar
Major texts of the 16th and 17th centuries. Topics may include lyric poetry and the “invention” of subjectivity; prose fiction; comedia and the relation between private and public life; humanism and the classical tradition; the invention of the press, the status of writing, and the new culture of the book; the (post)modernity of Golden Age literature.

- 122–23 **Cervantes’ *Don Quijote* and the Rise of the Novel (3)** Azar

Issues raised in the text of *Don Quijote*: literature and life, words and deed, the fashioning of self, the structures of narrative, the limits and possibilities of representation, and the relation between appearance and reality, knowledge and understanding, fiction and truth. Cervantes' "invention" of the novel. Prerequisite to Span 123: Span 122 or approval of instructor. (Academic year)

124 **Reason, Superstition, and Literature in 18th-Century Spain (3)** Britt

The development of neoclassical aesthetics in Spain: the confrontation of reason and superstition; the autonomy of critical thought vis-à-vis the doctrines of the Catholic Church and the absolute powers of the monarchy; culture as state-sponsored spectacle; the split between elites and masses, high and low culture; the conjunction of "good taste" and pedagogy.

125 **The Myth of the Two Spains (3)** Britt

Literature as an expression of the institutionalization of liberalism in 19th-century Spain and of official and popular resistance to this modernizing credo. Topics may include the romanticism of Quintana, Espronceda, Blanco-White and Becquer; the *costumbrismo* of Castro and Larra; the realism of Galdós; and the naturalism of Pardo Bazán and Clarín.

126 **The Literature of Spain's First Century Without Empire (3)** Britt

Spain's imperial crisis and its persistence throughout the 20th century as a central theme in Spanish literary and intellectual culture. Topics may include decadence and regeneration; modern Spanish nationalism and cultural imperialism; Hispanicism and pan-nationalism; the Spanish Civil War, fascism and liberalism; the transition from fascism to democracy. (Fall)

130 **Poetry of Spain and Spanish America (3)** Vergara, Hampton, Azar

Study of poetic traditions and genres. Analysis of representative texts from the early modern to the contemporary periods. Authors may include: Garcilaso, Quevedo, Darío, Silva, Lorca, Neruda, Salinas, Jiménez, Gioconda Belli. (Spring)

131 **Topics in the Cinema of the Hispanic World (3)** Staff

Film as a language of cultural and historical testimony in Spanish America and Spain. Topics may include the Silent Era, Surrealism, the Mexican Golden Age of the '40s, the New Cinema of the '50s, Peronist cinema in Argentina, socialist film in Cuba, and postmodern production in the Hispanic world. May be repeated for credit. Laboratory fee, \$30. (Fall)

132 **Theatre and the Hispanic Experience (3)** Azar, Britt, Captain

Theatrical representation: presence and performance, body, voice, dialogue, and the unfolding of conflict. Theatrical traditions and movements may include Golden Age drama; neo-Classical and Romantic drama of the 19th century; drama of political protest; existentialist drama and the theater of the avant-gardes. (Spring, alternate years)

133–34 **Special Topics in Spanish and Spanish-American Literature (3–3)** Staff

May be repeated for credit provided the topic differs.

140 **Latin American Women Writers (3)** Vergara

Works of well-established women writers (e.g., Sor Juana Inés de la Cruz, Gabriela Mistral, and Luisa Valenzuela) and of more recent writers (e.g., Elena Poniatowska, Diamela Eltit, Ana Lydia Vega, Cristina Peri-Rossi, and Laura Esquivel) discussed in relation to feminist principles of criticism. (Spring)

145 **Modern Spanish-American Poetry (3)** Vergara, Hampton, Waisman

Poetry after modernism; forms and themes that characterize the work of authors such as Agustini, Guillén, Huidobro, Lezama, Mistral, Neruda, and Palés. (Spring)

146 **Spanish-American Short Fiction (3)** Azar, Captain, Vergara, Waisman

Short prose narratives as agents of questioning textual meaning and subverting former literary traditions. Writers may include Arenas, Borges, Cortázar, Fuentes, García Márquez, Quiroga, Peri Rossi, Ana Lydia Vega, Zapata Olivella. (Fall)

147 **Spanish-American Polemics (3)** Britt, Captain, Waisman

Relations between state and nation in post-independence literary and political polemics of 19th century Spanish America. Topics may include the essay as a new genre for a new age; the figure of the public intellectual vis-à-vis the processes of state and nation formation; the post-colonial state and its imagined national, ethnic, racial, and economic communities. (Spring, alternate years)

148 **New Narrative in Spanish America (3)** Captain, Vergara, Waisman

Experimental fiction in Spanish America, with focus on literature of the mid-1960s through the present. Authors may include Alejo Carpentier, Julio Cortázar, Diamela Eltit, Carlos Fuentes, Cabrera Infante, Lezama Lima, García Márquez, Octavio Paz, Ricardo Piglia, Elena Poniatowska, Mario Vargas Llosa. (Fall)

149 **Spanish-American Colonial Literature (3)** Captain, Vergara

Analysis of chronicles, essays, memoirs, epistolary exchanges, and poetry contextualized vis-à-vis the medieval and Renaissance values of Imperial Spain. Authors may include Cabeza de Vaca, Bartolomé de las Casas, Colón, Cortés, Díaz del Castillo, El Inca Garcilaso de la Vega, Sor Juana Inés de la Cruz, Rodríguez Freile, Sepúlveda. (Spring)

150 **Spanish-American Romanticism and Modernism (3)** Captain, Vergara, Waisman

Study of two movements that shaped literary expression of Spanish America at the turn of the century and influenced political and cultural thought throughout the Hispanic world. Authors may include Heredia, Echeverría, Avellaneda, Isaacs, Darío, Martí, Lugones. (Fall, alternate years)

197 **Independent Study** (arr.) Staff

Admission by permission of department chair and instructor. May be repeated for credit.

198–99 **Proseminar** (3–3) Staff

Required of all majors; preparation for the major field examination. Literature in relation to the other arts and the social sciences. Span 198: textual analysis, literary criticism, theory, and methods. Span 199: the concepts of literary history and the history of Spanish literature; periods, authors, genres, topics. (Academic year)

ROMANCE LANGUAGES AND LITERATURES

55 **Topics in Romance Literatures and Cultures in Translation** (3) Staff

Topics and themes providing a multicultural and comparative approach to the study of the cultural productions of French, Italian, and Spanish-speaking people. Readings and lectures in English. May be repeated for credit provided the topic varies. A laboratory fee may be required. (Fall)

SCHOOL OF ENGINEERING AND APPLIED SCIENCE

This interdisciplinary course is offered under the joint auspices of the departments in the School of Engineering and Applied Science.

1 **Engineering Orientation** (1) Tong, Harrington

Introduction to careers in engineering and computer science, University resources, and computer skill development. Emphasizes teamwork skills by applying them to several design projects. (Fall)

SERVICE–LEARNING PROGRAM

154 Independent Study (1 to 3)

Staff

Fieldwork and a complementary academic program of study, under the supervision of an appropriate faculty member. Students must contract with the agency, the faculty member, and the Service–Learning Program in Columbian College. Graded on a Pass/No Pass basis only. Admission by permission of CCAS. May be repeated to a maximum of 6 credits. (Fall and spring)

700 SERIES

The 700 Series is made up of experimental or special courses that are on the cutting edge of the academic endeavor. Often, courses in the 700 Series focus on interdisciplinary or very current issues in a field. Courses range from freshman-level offerings to classes designed for seniors and graduate students. Unless the course description in the *Schedule of Classes* indicates that there are prerequisites or that an interview with the instructor is required prior to registration, all interested students are eligible to register, subject to their advisor's approval and the rules of the respective schools. Because 700 Series courses change each semester, students should consult the *Schedule of Classes* for offerings. Courses are listed with the participating departments; course descriptions appear in a specially designated section of the Schedule.

Courses numbered 701 are in one department, 721 courses are interdepartmental, 751 courses are interschool, and 770s and 780s are taught by University Professors and are listed in this

Bulletin under the designation of University Professors. The program is coordinated by the Executive Director of Academic Planning and Assessment.

SIGN LANGUAGE

See **Speech and Hearing Science**.

SLAVIC LANGUAGES AND LITERATURES

See **Romance, German, and Slavic Languages and Literatures**.

SOCIOLOGY

University Professor A. Etzioni

Professors W.J. Chambliss, S.A. Tuch, R. Weitzer, R.J. Cottrol, G.D. Squires (*Chair*)

Associate Professors H. Nashman, C. Deitch, M.A.P. Saunders

Assistant Professors C.E. Kubrin, I. Kennelly, D.S. Eglitis, F. Buntman, P. Davidson, L. Torres

Adjunct Professor C. Hartman

Adjunct Associate Professors R.B. Zamoff, L. Joseph

Adjunct Assistant Professors J.F. Markey, P.A. Konwerski, M. Mashayekhi

Assistant Professorial Lecturers K. Mulvey, V. Sardi

Bachelor of Arts with a major in sociology—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite course—Soc 1.
3. Required courses in the major—Soc 101, 102, 103, 104, 197, and seven additional 100-level sociology courses including at least two courses chosen from the 160s or 170s groups. It is recommended that Soc 101 and 102 be taken by the end of the junior year.

Bachelor of Arts with a major in criminal justice—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite course—Soc 1.
3. Required courses in the major—Soc 3, 101, 102, 136, 145, 192; PAd 125.10; and five courses chosen from Soc 135, 167, 178, 184, 189, 785; Psyc 11, 154; ForS 103–4; PSc 113, 115; Anth 150; Hist 175; Econ 167. (Course descriptions should be checked to determine that prerequisites have been met.) Soc 101 and 102 should be taken by the junior year.

Bachelor of Arts with a major in human services—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite course—Soc 1.
3. Required courses in related areas—Phil 135 and one course chosen from Comm 40, 41, 42, 120; 15 credit hours of 100-level courses in one other field of study, as approved by the major advisor.
4. Required courses in the major—HmSr 152, 171, 172, 176, 177, 182, 195; Soc 101, 104.

Five-Year Bachelor of Arts with a major in criminal justice and Master of Public Administration—Interested students should contact their advisor early in their junior year.

Five-Year Bachelor of Arts with a major in human services and Master of Public Administration—Interested students should contact their advisor by the end of their sophomore year.

Special Honors—In addition to meeting the general requirements stated under University Regulations, a candidate for graduation with Special Honors in sociology or criminal justice or human services must maintain a 3.3 grade-point average in required courses in the major, must

be registered in Soc 195 or HmSr 193 by fall of their senior year, and must complete a senior honors thesis.

Minor in sociology—18 hours of course work are required, including Soc 1, either Soc 103 or 104, plus 12 hours of electives in sociology courses at the 100 level, excluding Soc 192 and 197.

Minor in criminal justice—18 hours of course work are required, including Soc 1, 3, 136, and 145, plus 6 hours of electives chosen from Soc 167, 178, 184; Psyc 154; ForS 103; PSc 113 or 115; and PAd 125.10.

Minor in human services—A minimum of 18 hours of course work, including HmSr 152 (6 hours), 176, 182, 195, and an elective (Soc 1 is recommended) chosen with permission of advisor.

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

Note: A student majoring in sociology may not declare a second major or a minor in criminal justice, or vice versa. Students in all three departmental majors are required to earn a grade of C- or better in any course specifically required in the major. If a student receives a grade of D+, D, or D- in a required course, the student may either (1) repeat the course, in which case the grade in the repeated course must be no lower than a C-, and grades for both the original and repeated courses will appear on the student's transcript; or (2) take a 100-level course in the same department, in addition to the minimum number of courses required for the major, and receive a grade no lower than C-. Option 1 must be approved by the department chair in writing before the student may register for a course a second time.

Departmental prerequisite: Soc 1 is prerequisite to all 100-level sociology courses except Soc 105.

A systematic study of the work of selected social theories of the post–World War II era.

Emphasis on Parsons, Merton, Mills, Giddens, Smith, Blumer, Goffman, Berger,

Gramsci, Beauvoir, Wallerstein, Foucault, and Butler. (Spring)

105 **Social Problems in American Society** (3) Squires, Kubrin

Introduction to critical social problems (e.g., unemployment, poverty, crime, discrimination) in the United States and how they are, and have historically been, researched and understood by the academic and non-academic worlds. Concepts, theories, and methods of sociological research; examination of the field of social problems generally, emphasizing contemporary social problems.

111 **Qualitative Research** (3) Chambliss, Weitzer

Examination of the logic of qualitative inquiry and techniques of qualitative data collection and analysis. Various research methods are covered, with an emphasis on intensive interviewing, participant observation in field settings, and focus groups. (Spring)

112 **Evaluation Research** (3) Staff

Introduction to the evaluation of public programs designed to address the impact of social problems on individuals, households, and larger collective groups. Application of social science theory and research methods to the assessment of impact benefits and costs of such programs. (Fall)

135 **Youth and Delinquency** (3) Chambliss, Kubrin

Analysis of historical, economic, and social conditions affecting both difficulties in socializing youth and the evolution of the state's formal systems of control. (Spring)

136 **Criminology** (3) Chambliss, Weitzer

Nature and distribution of crime as related to the development and operation of criminal law and various social and legal institutions. Analysis of the historical, social, legal, and cultural conditions affecting the nature of crime, criminality, and the development of state responses made to it. (Spring)

145 **Criminal Law (3)** Chambliss, Buntman

Introduction to the sources and fundamental principles of criminal law and procedure using major sociological perspectives as interpretive tools. (Spring)

150 **Sociology of Sport (3)** Zamoff

Sport as a social institution; the role, consequences, and functions of sport in U.S. society. Relationships between sport and the institutions that impact our lives: education, mass media, economics, politics, etc.

151 **Jackie Robinson: Race, Sport, and the American Dream (3)** Zamoff

How Jackie Robinson's struggles and accomplishments can help in understanding current issues in race, sport, and U.S. society. The background leading to, and the impact emanating from, Robinson's entry into major league baseball.

161 **Sociology of Complex Organizations (3)** Staff

Review of sociological approaches to the study of complex organizations. Selected and comparative emphasis on bureaucratic organization in both government and private sectors. (Spring)

162 **Sociology of the Family (3)** Staff

An examination of the stages of family life: birth, childhood, premarital relationships, marriage and sex roles in marriage, retirement and old age. Special emphasis on development and maintenance of interpersonal relations. (Fall)

163 **Sociology of Education** (3) Staff

Analysis of educational systems from historical–comparative, institutional, and micro-sociological perspectives. Emphasis on educational systems in relation to the religious, cultural, economic, and political forces shaping their character; the role of formal education in modern society. (Spring)

165 **Sociology of Religion** (3) Yeide

Analysis of the relationships between religion and society. Topics include the contribution of religion to social integration, social change, and social inequality; the nature of religious experience; religious symbolism; the basis of religious communities. (Spring)

167 **Sociology of Law** (3) Chambliss, Buntman

Law as a social phenomenon and agency of social control. Special emphasis is placed on study of the sources of and challenges to the legitimacy of law. (Fall)

168 **Economic Sociology** (3) Staff

Sociological approach to the study of micro- and macroeconomic behavior. Historical and comparative analyses informed by the literature of sociology and other social sciences. Critical review of economic policy in developing, post-communist and advanced market societies. (Spring)

169 **Urban Sociology** (3) Squires, Davidson

Analysis of the city from a sociological perspective. Topics include a focus on the social change and inequality associated with urban growth, neighborhood change, and suburbanization; residential segregation; the issue of whether community exists in cities; urban poverty and homelessness. Prerequisite: Soc 1.

170 **Class and Inequality** (3) Tuch, Torres

Analysis of distribution of resources and opportunities for participation, education, and social mobility. International comparisons; analysis of public policies that affect these distributions. (Fall)

173 **Social Movements** (3) Staff

General survey of the various forms of collective behavior (fads, panics, riots, social movements, etc.), and a more detailed study of the genesis, development, and decay of social movements and social revolutions. (Spring)

175 **Sociology of Sex and Gender** (3) Kennelly, Eglitis, Torres

The roles of women and men from social structural and social psychological perspectives. Analysis of gender inequality in such areas as the family, the workforce, the media, politics, law, religion, and education.

178 **Deviance and Control** (3) Weitzer, Kubrin

Examination of deviant behavior and its control. Topics include theoretical perspectives, changing societal conceptions of deviance, deviant behavior and identity, and the dynamics of control agencies. (Fall)

179 **Race and Minority Relations** (3) Tuch, Torres, Squires

Analysis of relationships between dominant and minority groups in society; nature and range of problems; analysis of the phenomenon of prejudice. (Spring)

181 **Special Topics in Sociology** (3) Staff

Analysis and examination of various processes in society of general importance to the field of sociology, e.g., social conflict, socialization, social change. Topic changes each semester; may be repeated once for credit. (Fall and spring)

182 **Sociology of Memory** (3) Staff

Commemorates major societal events (e.g., court cases, formation of organizations, publications) and examines their meanings for the contemporary culture of U.S. communities.

184 **Violence and the Family** (3) Weitzer

Comparative approach to power and violence in family systems. Analysis of devaluation of family relations. Critical survey of explanations of violence and responses made to it. (Fall)

189 **Special Topics in Criminal Justice** (3) Staff

Analysis and examination of various processes and problems of general importance to the field of criminal justice. Topic changes each semester; may be repeated once for credit. (Fall and spring)

192 **Advanced Seminar in Criminal Justice** (6) Chambliss, Weitzer

Restricted to seniors majoring in criminal justice. Internship in a criminal justice agency; field placement in consultation with a faculty member is required before registration. Weekly seminar meetings, presentations, journal, and a paper are required. Prerequisite: Soc 136 or 145. (Fall and spring)

195 **Research** (1 to 3) Staff

Independent study and special projects. Open only to selected undergraduates with promising academic records. Prerequisite: Students must submit a written proposal of their plan of study for the approval of the member of the department who will direct the research. May be repeated for credit to a maximum of 6 credits. (Fall, spring, and summer)

197 **Advanced Seminar in Sociology (6)** Eglitis

Restricted to seniors majoring in sociology. Students spend at least 12 hours a week in an approved community agency or organization in metropolitan Washington. Field placement in consultation with a faculty member is required before registration. Weekly seminar meetings, reports, a journal, and a written paper are required. (Fall and spring)

HUMAN SERVICES

133 **Supervised Experience in Human Services (3 to 6)** Nashman

Development of experience-based perspective on human services through fieldwork in a community-based agency or organization. Meetings, journal, and research paper. Admission by permission of instructor. (Fall and spring)

152 **Issues in Human Services (1 to 6)** Nashman

An inquiry into the values and methods of practitioners in the field of human services, linking academic study and field experience. Admission by permission of instructor. (Fall and spring)

171 **Introduction to Human Development I (3)** Sardi

Lectures and fieldwork. All aspects of development through adolescence; child study techniques. Two to three hours weekly field experience in appropriate setting. (Fall)

172 **Introduction to Human Development II (3)** Staff

Adult development from young adulthood to old age. Dominant psychological, social, and physical competencies; motivational changes; coping styles; maladaptive behavior. Three hours weekly field experience in appropriate agency setting. (Spring)

176 **Program Planning and Development for Service Agencies (3)** Saunders

Examination of program planning and development activities essential to human service agencies. Through case studies and on-site field experiences, students examine and analyze a variety of processes in which agency needs are assessed and programs planned.

Prerequisite: Status as a human services major or minor or permission of the instructor. (Fall)

177 Human Services and Community: Konwerski

Empowerment for Social Change (3)

The community as a laboratory for the study of contemporary issues in philanthropy aimed toward social change. Through readings, observations, and group internships, students participate in various aspects of community service.

(Fall)

182 Organization and Administration in the Human Services (3) Saunders

Introduction to organizational theory and program administration in non-school agencies, staff recruitment and development, fiscal operations, personnel and program supervision, facilities, and maintenance of effective community relations. Prerequisite: Status as a human services major or minor or permission of the instructor. (Spring)

193 Research and Independent Study (arr.) Nashman

Individual research and special projects. Admission by permission of instructor.

195 Seminar in Human Services: Current Issues (3) Konwerski

Analysis of selected issues in human services. Each student conducts an investigation of an identified problem in human services and completes a skill assessment project.

Admission by permission of instructor. (Spring)

198 Topics in Human Services (1 to 3) Nashman

Topics to be announced in the *Schedule of Classes*. May be repeated for credit.

SPANISH

See **Romance, German, and Slavic Languages and Literatures**.

SPEECH AND HEARING SCIENCE

Professor C.W. Linebaugh

Associate Professors M.D.M. Brewer, G.M. Schulz (*Chair*), L. Bland-Stewart

Assistant Professors N.S. Richards, S. Brundage, J. Brown

Assistant Professorial Lecturers M.E. Moody, C. Robbins, D. Williamson

Bachelor of Arts with a major in speech and hearing science—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Required courses in related areas—Ling 101; Psyc 1, 121, 131.
3. Required courses in the major—SpHr 11, 71; either SpHr 72 or Anth 4; SpHr 104, 105–6, 107, 108, 118, 119, 130, 131, 132.

Students who plan to go on to graduate study should note that the accrediting body (ASHA) requires undergraduate course work in biological sciences, chemistry or physics, and statistics or mathematics to enter a graduate program.

Minor in speech and hearing science—15 credit hours selected with approval of the departmental advisor.

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

Speech and hearing therapy: See the Speech and Hearing Center.

Development of naturalness, correctness, and clarity in conversation through the study of phonetics, rate, volume, pitch, and quality in preparation for performance. Laboratory fee, \$10. (Fall, spring, and summer)

71 **Foundations of Human Communication (3)** Moody, Richards

An introduction to the fundamental principles of the biology of speech, hearing and language, language structure and use, and human communicative interaction. Practice in the identification of specific verbal and nonverbal aspects of communication behavior. (Fall and spring)

72 **Multicultural Issues in Human Communication (3)** Bland-Stewart

Consideration of the influences of culture and bilingualism on language development and use and on communicative interaction; experimental and ethnographic methods for studying language and communication in a multicultural society. (Fall and spring)

81–82 **Sign Language and Deafness I–II (3–3)** Robbins

SpHr 81: Development of basic communication skills, with appropriate vocabulary and grammatical structures; emphasis on comprehension skills. SpHr 82: Further development of communication competencies in American Sign Language (ASL) above the basic level. SpHr 81 is prerequisite to SpHr 82. (SpHr 81 and 82—fall and spring)

104 **Speech and Language Disorders (3)** Williamson

Survey of the nature and causes of developmental and acquired disorders of speech and language. Emphasis on prevention and effective communication with persons having a speech–language impairment. (Fall)

105–6 **Anatomy and Physiology for Speech and Hearing I–II (4–4)** Staff

SpHr 105: Anatomy and physiology of the respiratory, phonatory, articulatory, and resonatory subsystems of speech; swallowing; and the cranial nerves. SpHr 106: Anatomy of the ear; physiology of hearing; anatomy of the brain and spinal cord; physiology of the nervous system. Laboratory fee, \$55 per semester.

(Academic year)

107 **Acoustics** (3) Brewer

The basic acoustics needed for understanding audition, speech acoustics and perception, and instrumentation. Laboratory fee, \$55. (Fall)

108 **Introduction to Audiology** (3) Brewer

Survey of the field of audiology, including the measurement of hearing, the nature and causes of hearing impairment, hearing aids and habilitation/rehabilitation of the hearing impaired. Prerequisite: SpHr 101. Laboratory fee, \$20. (Spring)

118 **Senior Seminar** (3) Brundage

Critical evaluation of the research literature on speech and hearing; the process of scientific writing and analysis; how research can inform and improve clinical practice. For departmental majors in the senior year. Laboratory fee, \$35. (Fall)

119 **Analysis and Modification of Communication Disorders** (3) Staff

Assessment of speaker–listener behavior; acoustic, behavioral, and linguistic properties of speaker intelligibility and credibility; observation, analysis, and modification of speech and language comprehension and expression. Prerequisite: SpHr 71 or 104. Laboratory fee, \$20. (Spring)

130 **Phonetics and Phonological Development** (3) Staff

Detailed study of English phonetics and phonology; prespeech vocalization and phonological development; multicultural issues in phonological development; intensive practice in phonetic transcription. Laboratory fee, \$25. (Fall)

131 **Language Acquisition and Development** (3) Bland-Stewart

Theories of language acquisition; development of language from birth through adolescence; emphasis on development of semantics, syntax, morphology, and pragmatics; multicultural issues in language development. Laboratory fee, \$25. (Spring)

132 **Literacy** (3) Brundage

An overview of literacy development (thinking, listening, speaking, reading, spelling, writing) with emphasis on reading and writing development. Laboratory fee, \$35. (Fall)

196 **Independent Study** (1 to 6) Staff

Independent research and special projects. Before students are permitted to register for SpHr 196, they must submit a written proposal of the plan of study and obtain approval of the staff member who will direct the study and of the department chair.

199 **Selected Topics** (3) Staff

Topic announced in the *Schedule of Classes*. May be repeated for credit provided the topic differs.

STATISTICS

Professors J.L. Gastwirth, N.D. Singpurwalla, J.M. Lachin III, H.M. Mahmoud, T.K. Nayak

(*Chair*), Z. Li, J. Chandra (*Research*), R.L. Launer (*Research*)

Associate Professors S. Bose, R. Modarres, E. Bura

Assistant Professors S. Kundu, S. Balaji, Y. Lai

Lecture (3 hours), laboratory (1 hour). Frequency distributions, descriptive measures, probability, sampling, estimation, tests of hypotheses, regression and correlation, with applications to social sciences. (Fall and spring)

91 **Principles of Statistical Methods (3)** Staff

Probability, frequency distributions and their characteristics, descriptive measures, estimation, tests of hypotheses, regression and correlation. Primarily for students in the natural sciences. (Fall)

103 **Sampling in Accounting (3)** Ponti

Special emphasis on applications of sampling techniques and design to accounting problems. Prerequisite: Stat 51, 53, 91, or equivalent. (Fall)

104 **Statistics in Management, Administration, and Policy Studies (3)** Staff

Lecture (3 hours), laboratory (1 hour). Introductory study of statistical techniques for research problems. For graduate students in fields other than statistics who have no previous statistics training. Offered off campus only.

105 **Statistics in the Behavioral Sciences (3)** Ponti

Lecture (3 hours), laboratory (1 hour). Advanced study of statistical techniques for research problems. Analysis of variance, correlation techniques, nonparametric techniques, sampling theory. Prerequisite: an introductory statistics course and satisfactory performance on a placement examination. (Fall)

111 **Business and Economic Statistics I (3)** Gastwirth, Bura

Descriptive statistics, graphical methods, probability, special distributions, random variables, sampling, estimation and confidence intervals, hypothesis testing, correlation and regression. (Fall)

112 Business and Economic Statistics II (3) Gastwirth, Bura

Continuation of Stat 111, with emphasis on techniques of regression, chi-square, sampling designs, index numbers, time series, decision analysis, and other topics used in economics and business. Prerequisite: Stat 111 or equivalent.

(Fall and spring)

118 Regression Analysis (3) Kundu

Lecture (3 hours), laboratory (1 hour). Simple and multiple linear regression, partial correlation, residual analysis, stepwise model building, multicollinearity and diagnostic methods, indicator variables. Prerequisite: an introductory statistics course. (Fall and spring)

119 Analysis of Variance (3) Staff

Lecture (3 hours), laboratory (1 hour). Introduction to the design of experiments and analysis of variance; randomized block, factorial, Latin square designs, and analysis of covariance. Prerequisite: Stat 118. (Spring)

123 Introduction to Econometrics (3) Staff

Same as Econ 123.

127 Statistics for the Biological Sciences (3) Lai

Introduction to statistical techniques and reasoning applicable to the biomedical and related sciences. Properties of basic probability functions: binomial, Poisson, and normal.

Data analysis, inference, and experimental design. (Spring)

129 Introduction to Computing (3) Mahmoud, Teitel

Introduction to elements of computer programming and problem-solving using Pascal.

Hands-on experience will be acquired through computer programming projects, including some simple statistical applications. (Fall and spring)

130 Computer Programming (3)

Staff

Development of advanced computing ideas: records, recursion, sets, pointer variables and dynamic storage. Introduction to data structures: stacks, queues, linked lists, and binary search trees. Prerequisite: Stat 129 or equivalent. (Spring)

157–58 Introduction to Mathematical Statistics (3–3)

Bose, Mahmoud

Stat 157: Basic concepts of probability theory, including random variables, independence, distribution theory, and sampling theory. Stat 158: Inference procedures, including estimation, hypothesis testing, regression analysis, and experimental design.

Prerequisite: Math 32 or equivalent. (Academic year)

173 Discrete Systems Simulation (3)

Staff

Same as EMSE 173.

181 Applied Time Series Analysis (3)

Wu

Autoregressive integrated moving average (ARIMA) modeling and forecasting of univariate time series. Estimation of spectral density functions, white noise tests, and tests for periodicities. Theory and applications using SAS. Prerequisite: Math 33, Stat 157–58 or 118. (Spring)

183 Intermediate Statistical Laboratory: Statistical Computing Packages (3) Modarres

Application of program packages (e.g., SAS, SPSS) to the solution of one-, two- and k-sample parametric and nonparametric statistical problems. Basic concepts in data

preparation, modification, analysis and interpretation of results. Prerequisite: an introductory statistics course. (Fall and spring)

187 **Introduction to Sampling** (3) Staff

Problems of sampling and sample design. Prerequisite: Stat 91 or equivalent. (Fall)

188 **Nonparametric Statistical Inference** (3) Staff

Statistical inference when the form of the underlying distribution is not fully specified.

Nonparametric procedures for estimation and testing hypotheses. An introduction to robust procedures. Prerequisite: Stat 91 or equivalent. (Fall, even years)

189–90 **Mathematical Probability and Applications** (3–3) Mahmoud

Probability theory, including combinatorial analysis, conditional probability, and stochastic independence. Random variables and their distributions; laws of large numbers and central limit theorem. Application of concepts to elementary stochastic processes (coin-tossing sequences, branching processes, Markov chains). Prerequisite: Math 32 or equivalent. (Alternate academic years)

195 **Reading and Research** (arr.) Staff

May be repeated once for credit. Admission by permission of department chair. (Fall and spring)

197 **Fundamentals of SAS Programming for Data Management** (3) Modarres, Teitel

Fundamentals of the SAS system for data management, statistical analysis, and report writing. Data modification; programming; file handling; and macro writing. Prerequisite: An introductory statistics course and Stat 129. (Spring)

198 **Special Topics** (3) Staff

Topic to be announced in the *Schedule of Classes*. May be repeated for credit provided the content differs.

STRATEGIC MANAGEMENT AND PUBLIC POLICY

Professors H.J. Davis, W.H. Becker, D.J. Lenn, M. Starik, T. Fort

Associate Professors J.B. Thurman (*Chair*), J. Cook, E.J. Englander, J.H. Beales III, L. Burke, J.

Griffin, B.S. Teng

Assistant Professors D.R. Kane, J. Rivera

Professorial Lecturer W.N. LaForge

See the School of Business for programs of study leading to the degree of Bachelor of Business Administration.

51 **Introduction to Business (3)** Staff

Structure, activities, and problems of business enterprise; its contribution to the individual and society; careers in business. Prerequisite: Sophomore standing. (Fall)

190 **Special Topics (3)** Staff

Experimental offering; new course topics and teaching methods.

199 **Independent Study (arr.)** Staff

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. (Fall and spring)

THEATRE AND DANCE

Professors M.R. Withers, A.G. Wade, L.B. Jacobson (*Chair*), N.C. Garner

Associate Professors W.A. Pucilowsky, C.F. Gudenius, E.J. O'Brien

Assistant Professors B.W. Sabelli, M.A. Buckley, D.T.S. Burgess

Adjunct Associate Professor K.Z. Keller

Bachelor of Arts with a major in theatre—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Required courses in related areas—9 credit hours in dramatic literature and playwriting at the 100 level.
3. Required courses in the major—TrDa 14, 124, 130, 139 (3 credits), 145–46, 147; 6 credit hours in design/technical theatre courses; 12 additional credit hours in 100-level theatre and dance courses.

Bachelor of Arts with a major in dance—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Required courses in the major: 13 credit hours of courses in technique; 17 hours of courses in creative process/performance/theory; 3 hours of production design; 6 hours of electives. The department maintains a list of courses that fulfill these requirements.

Bachelor of Arts with a major in dramatic literature—The Department of Theatre and Dance and the Department of English offer an interdisciplinary major in dramatic literature. See Dramatic Literature.

Minor in Theatre—18 credit hours of theatre courses, including TrDa 145–46.

Minor in Dance—18 credit hours of dance courses, including no more than 9 hours from TrDa 49 through 59 and 160 through 175, plus 3 hours from TrDa 180, 182–83, 185, 186, and 191.

Special Honors—In addition to meeting the general requirements stated under University Regulations, candidates for graduation with Special Honors in Theatre or Dance must have a grade-point average of 3.4 in the major and complete TrDa 199 with a grade of *A*. They must consult with a faculty advisor at the beginning of the second semester of the junior year to determine eligibility, area of study, and the director of the research or creative project.

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

Note: Courses below the 100 level are primarily for nonmajors.

11 **Theatre Production (3)** Sabelli

Understanding of the basic elements of production (performance, technical and management) and the collaborative artist/artisan process through discussion, observation, and practical application. (Fall and spring)

14 **Introduction to Acting (3)** Garner, Jacobson, Wade

Basic techniques of concentration, imagination, improvisation, and character development. (Fall and spring)

45 **Understanding the Theatre (3)** Sabelli

The art of the theatre; its literature, architecture, aesthetics, and mechanics. Contributions of the playwright, actor, director, and designer. Attendance at theatrical performances, presentations, and videos. (Fall and spring)

46 **Understanding the Dance (3)** Staff

The art of dance—a lecture and experiential approach to its cultural importance, history, and creative processes. The contributions of the choreographer and dancer to society.

Attendance at performances and presentations, and viewing video. (Fall and spring)

49 **Movement Awareness (2)** Staff

An experiential dance movement class that examines human movement and its connection to dance. Somatic concepts of Alexander, Feldenkrais, Bartenieff, and

Body/Mind/Centering. (Fall and spring)

50 **Beginning Ballet (1)** Staff

Introduction to classical ballet technique, including basic concepts of dynamic alignment, stretch, strength, and musicality.

51 **Beginning/Intermediate Ballet (1)** Staff

52 **Beginning Modern/Postmodern Dance (1)** Staff

Introduction to modern dance technique inclusive of basic concepts of dynamic alignment, stretch, strength, improvisation and musicality.

53 **Beginning/Intermediate Modern/Postmodern Dance (1)** Staff

58 **Beginning Spanish Dance (1)** Staff

Introduction to the art form of classical Spanish dance, including basic movement rhythms and polyrhythmic uses of the feet, hands, arms, and castanets.

59 **Beginning/Intermediate Spanish Dance (1)** Staff

105 **Fundamentals of Playwriting (3)** Griffith

Same as Engl 105.

108 **Intermediate Playwriting (3)** Griffith

Same as Engl 108.

115 **Introduction to Scene Study: Realism (3)** Garner, Jacobson, Wade

Principles of role development, concentrating on 20th-century material. Prerequisite:

TrDa 14. (Fall and spring)

116 **Scene Study: Voice and Character (3)** Jacobson

The practice and application of voice production with reference to skeletal alignment, breathing, resonance, and articulation. Emphasis on the process of voice production and its application to performance through work on scenes and monologues. Prerequisite:

TrDa 115. (Fall and spring)

- 120 **Scene Study: Postrealism** (3) Wade
The actor's approach to the presentational aesthetics in the work of modern and contemporary dramatists. Prerequisite: TrDa 116. (Spring, even years)
- 121 **Scene Study: Contemporary Comedy** (3) Garner, Jacobson
Principles of role development, comic timing, and stage business, concentrating on material by contemporary playwrights, such as Neil Simon. Prerequisite: TrDa 116. (Fall, odd years)
- 122 **Scene Study: Shakespeare** (3) Wade
Principles of role development and handling of verse dialogue in Shakespearian drama. Prerequisite: TrDa 116. (Fall, odd years)
- 123 **Scene Study: Classical Comedy** (3) Jacobson, Garner
Principles of role development, concentrating on material from the English Restoration, Molière, and other 17th- and 18th-century playwrights. Prerequisite: TrDa 116. (Spring, even years)
- 124 **Play Analysis** (3) Staff
Same as Engl 124.
- 125 **Stage Dialectics** (3) Jacobson
Vocal production related to interpretation of specific texts. Focus on stage dialects and the interpretation of Shakespeare. Prerequisite: TrDa 116. (Spring, odd years)
- 127 **Scene Study: Film and Television** (3) Wade
Techniques of acting for the camera; analysis of film and television scripts from actor's point of view. Prerequisite: TrDa 116. Laboratory required. Laboratory fee, \$10. (Spring)

- 128 **Audition Techniques** (3) Garner
All aspects of the audition process: selection and rehearsal of audition monologues, handling of cold reading, etc. Prerequisite: TrDa 116. (Fall)
- 130 **Basics of Production Design** (3) Sabelli, Pucilowsky, Gudenius
Understanding of the basic elements of production design and execution through discussion, observation, and practical application. Laboratory required. Laboratory fee, \$50. (Fall and spring)
- 131 **Introduction to Lighting** (3) Gudenius
Lecture (2 hours), laboratory (1 hour). Theories and practicum in lighting for theatre and dance. Laboratory fee, \$15. Prerequisite: TrDa 130. (Fall)
- 132 **Makeup Design** (3) Pucilowsky
Theory and practicum in the art of makeup design, including latex and crepe hair. Prerequisite: TrDa 130. (Fall)
- 135 **Introduction to Scene Design** (3) Sabelli
Fundamental study of scenography, including historic overview, basic drawing, and rendering techniques, through the use of various mediums and script analysis. Prerequisite: TrDa 130. (Fall)
- 136 **Beginning Costuming** (3) Pucilowsky
History of fashion in Western civilization from ancient Greece to the 20th century. Fundamental study of costume research through specific projects. Costume construction. Prerequisite: TrDa 130. (Spring)
- 139 **Theatre Practicum** (1) Gudenius

Participation in department mainstage productions in a production or management capacity under the supervision of a member of the faculty. Prerequisite: TrDa 11 or 130. May be repeated for credit. After completing for 3 credits, students may participate in a performance capacity for an additional 3 credits. Prerequisite: TrDa 11 or 130. (Fall and spring)

140 Anthropology in Performance (3) Garner, Allen

Exploration of the relationships among social interaction, ritual, and dramatic performance. Classes consist of improvisation workshops and discussion, based on readings about non-Western cultures. Same as Anth 191. (Spring)

145–46 History of the Theatre (3–3) Staff

A dramaturg's approach to case studies of theatre in historical context. TrDa 145: ancient Greece through the 17th century. TrDa 146: the 18th century through the present. (Academic year)

147 Directing for the Theatre (3) Garner

Fundamentals of script analysis, casting, and rehearsal techniques. Prerequisite: TrDa 14, 124, 130. Laboratory fee, \$15. (Fall and spring)

156 Dance in Community Settings (3) Burgess

Examination of dance in Washington area communities. Students are required to site visit and engage with individuals and organizations that focus on dance as it pertains to performance, therapy, management, and education. Participation in activities with a dance artist/practitioner or with a producing/service organization is required. (Spring)

160–61 Intermediate Ballet (2–2) Staff

May be repeated for credit. Prerequisite: TrDa 51 to 160, TrDa 160 to 161, or permission of instructor.

162–63 Intermediate/Advanced Ballet (2–2) Staff

May be repeated for credit. Prerequisite: TrDa 161 to 162, TrDa 162 to 163, or permission of instructor.

164–65 Advanced Ballet (2–2) Staff

May be repeated for credit. Prerequisite: TrDa 163 to 164, TrDa 164 to 165, or permission of instructor.

170–71 Intermediate Modern/Postmodern Dance (2–2) Burgess

Recommended for students with previous dance experience in jazz, ballet, hip hop, modern, or other styles. May be repeated for credit. Prerequisite: TrDa 170 to 171, or permission of instructor.

172–73 Intermediate/Advanced Modern/Postmodern Dance (2–2) Staff

May be repeated for credit. Prerequisite: TrDa 171 to 172, TrDa 172 to 173, or permission of instructor.

174–75 Advanced Modern/Postmodern Dance (2–2) Staff

May be repeated for credit. Prerequisite: TrDa 173 to 174, TrDa 174 to 175, or permission of instructor.

179 Contact Improvisation (2) Staff

A movement form that arises from the point of contact between partners who explore gravity, space, and timing in the spontaneous moment-to-moment exchange of the dance. Exploring the improvisational state of body/mind through the use of imagery, tuning the senses, mindfulness practices, and play.

180 **Movement Improvisation and Performance** (3) Withers

Exploring the body and its surroundings in movement, use of language, narrative, environments and contexts for creative expression, developing event and performance structures from improvisation. May be repeated for credit.

(Spring)

182–83 **Dance Composition** (3–3) Withers

TrDa 182: Problems in structural and conceptual aspects of constructing dances and shaping and forming movement materials. TrDa 183: Emphasis on intention and content in making dances. Prerequisite: TrDa 180; recommended: TrDa 185. (Academic year)

184 **Choreographic Projects** (3) Withers, Burgess

Create a dance or a performance work of individual design, including casting, rehearsal procedures, staging aspects, and public presentation. Prerequisite: TrDa 182; recommended: TrDa 130, 185. May be repeated for credit.

185 **Trends in Performance Art** (3) Withers

Study of the theory and practice of contemporary performance art movements and artists; political and artistic activism; scripting and scoring to create performance works based on a single art discipline or interdisciplinary arts. (Fall)

186 **Movement Analysis** (3) Burgess

An experiential and theoretical approach to dynamic anatomy and kinesiology as they pertain to the dancer. The student is encouraged to reach full movement potential in relation to contemporary dance techniques, performance, and injury prevention. (Fall)

191 **Dance History** (3) Buckley

The history of Western theatrical dance from the late 18th century to the present. The major choreographers and their dance works through readings, lectures, video, and discussion. (Spring)

192 **Repertory/Performance** (1 or 2) Withers

Participation in the processes of learning and performing dance repertory or new dance works. Audition required. Laboratory required. May be repeated for credit. (Fall and spring)

193–94 **Dance Styles** (arr.) Staff

Forms of theatrical dance other than ballet or modern, including African dance, Angola Capoeira, classical Indian dance, music theatre, Spanish dance, and others. May be repeated for credit provided the topic differs.

195 **Selected Topics** (1 to 3) Staff

Topics of current interest in theatre or dance. Topics announced in the *Schedule of Classes*. May be repeated for credit provided the topic differs.

196 **Independent Study** (1 to 6) Staff

Independent research and special projects. Open to qualified juniors or seniors majoring or minoring in theatre or dance. Before students are permitted to register for TrDa 196, they must submit a written proposal of the plan of study and obtain approval of the faculty member who is directing the study and the department chair.

198 **Internship** (3 or 6) Staff

Open to qualified seniors majoring or minoring in theatre or dance. Work placements with not-for-profit and commercial theatre and dance organizations for an approved

number of hours per week. Admission requires departmental approval. May be taken for a maximum of 6 credits. (Fall and spring)

199 Honors Thesis (3)

Staff

Directed research and/or creative project. Open to qualified seniors by permission.

Arrangements must be made with a sponsoring faculty member in the department and applications must be completed early in the second semester of the junior year. (Fall and spring)

TOURISM AND HOSPITALITY MANAGEMENT

Professors D.E. Hawkins, D. Frechtling

Associate Professors L. Yu (*Chair*), L.A. Delpy Neirotti, S. Elliott, M.V. Smith

Assistant Professor R. Brouard

Professorial Lecturer W.C. Corkern

Assistant Professorial Lecturer E. Zavian

Lecturer H.E. Reichbart

See the School of Business for programs of study leading to the degree of Bachelor of Business Administration and the five-year program leading to the Bachelor of Business Administration and Master of Tourism Administration.

104 Introduction to Tourism and Hospitality Management (3)

Staff

Historical overview and survey of the tourism and hospitality industry, with emphasis on the travel market, delivery of hospitality services, professional roles, and emerging trends. (Fall and spring)

113–14 Practicum (3–3)

Staff

Fieldwork, internship, and/or instructional practice, including conference and/or seminar.

Admission by permission of instructor. May be repeated once for credit with permission of advisor. (Fall, spring, and summer)

135 Sport and Event Business Enterprises (3) Delpy Neirotti

An overview of business opportunities related to sport and events. Emphasis on sport and event facilities and event management; product manufacturing, merchandising, and licensing; media and publications; and athlete representation. (Fall)

136 Sport and Event Marketing (3) Delpy Neirotti

Application of marketing theories and practices to sport and events. Sponsorship, endorsement proposals, public relations, and promotional campaigns. Prerequisite: BAdm 110. (Spring)

137 Issues in Sport and Event Management (3) Delpy Neirotti

A discussion of policies, procedures, organizational structures, issues, and trends in sport and events, from amateur to professional. (Spring)

143 Hospitality Industry Management (3) Staff

An overview of the basic principles and practices involved in the management, operation, marketing, and financing of hotels, restaurants, and other hospitality goods and services. (Fall)

144 Financial Management in the Tourism and Hospitality Industry (3) Yu

Basic principles of planning and managing tourism resources, developments, and facilities in relation to investment constraints and opportunities. Financial monitoring and control of hospitality facilities and related leisure services. Prerequisite: BAdm 115. (Spring)

145 **Travel Marketing Communications** (3) Elliott

Review of basic advertising, public relations, and sales techniques, applied to the tourism and hospitality industry. Current practices and case studies. (Spring)

147 **Passenger Transportation Systems** (3) Staff

Survey of passenger transportation modes. Emphasis on airline operations, marketing communications, and distribution channels. (Fall)

172 **International Experiences** (1 to 6) Delpy Neirotti

Travel to a foreign country for study of a specific topic. May be repeated for credit with permission of the advisor. (Fall, spring, and summer)

190 **Special Topics** (1 to 3) Staff

Experimental offering; new course topics and teaching methods. May be repeated once for credit. (Fall, spring, and summer)

199 **Independent Study** (1 to 3) Staff

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. (Fall, spring, and summer)

UNIVERSITY PROFESSORS

University Professors A. Etzioni, P.J. Caws, S.H. Nasr, K.F. Schaffner, J.N. Rosenau, S.A.

Saltzburg, H. Harding

Courses numbered in the 770s and 780s are taught by distinguished scholars who hold appointments as University Professors. With the approval of the department or program concerned, appropriate University Professor courses may be taken to satisfy degree program requirements. Permission of the University Professor may be required for enrollment. A complete listing of courses offered each semester appears in the *Schedule of Classes* under the

700 series. Following is a list of courses that are expected to be taught fairly regularly by University Professors.

IAff/PSc

770 Turbulence in World Politics (3)

Rosenau

An effort to probe the sources and dynamics of change and continuity in local, national, and international affairs. The links between the orientations of individuals and the actions of collectivities are a major focus, along with the foundations of authority under transformative conditions. For graduate students; open to upper-level undergraduates.

IAff/PSc

771 Political Aggregation (3)

Rosenau

An exploration of how collective action is fashioned out of the input of individuals, how collectivities become larger than the sum of their parts, and how political organizations manage to persist through time. Socialization, mobilization, momentum, and bandwagon effects are among the concepts evaluated. For graduate students; open to upper-level undergraduates.

IAff/PSc

772 The Dynamics of Globalization (3)

Rosenau

An inquiry into the economic, cultural, and political processes through which individual and community life is expanding as awareness encompasses factors on a global scale. The consequences of this expansion at both global and local levels is examined, along with the possibility that these levels interact. For graduate students; open to upper-level undergraduates.

IAff/PSc

773 **Global Governance (3)**

Rosenau

An inquiry into the prospects for and problems of governance on a global scale in the era following the end of the Cold War. Informal forms of governance as well as those that have undergone institutionalization are assessed. For graduate students; open to upper-level undergraduates.

Phil

772 **Individualism (3)**

Caws

The concept of the free individual in philosophy, psychology, literature, and politics: individuals and groups; individualism and collectivism; exemplary individuals in biography, autobiography, and fiction; problems of individual and collective agency and identity. For undergraduates; open to graduate students.

Phil

774 **Understanding Technology (3)**

Caws

The idea of technology—its relation to the sciences and the arts and humanities, its development, and its problems. Technology will not be regarded as merely dependent on the sciences or as merely useful (or dangerous) but as a human activity in its own right, with its own history, conceptual structure, interests, risks, and benefits. For undergraduates; open to graduate students.

Phil

778 **Left and Right in Philosophy and Politics (3)**

Caws

A fundamental inquiry into the concept of the state in terms of entrenched oppositions: individualism/collectivism, equality/liberty, liberalism/conservatism, socialism/free

enterprise, communism/capitalism. Emphasis on the present need to find a constructive transcendence of these oppositions. For graduate students; open to undergraduates.

Phil

779 Philosophy and Psychoanalysis (3)

Caws

An exploration of some striking parallels between the topics addressed by Freud's psychoanalytic theories on the one hand and the traditional content of philosophical reflection on the other, with special emphasis on the relation between cognitive theory and therapeutic practice (in both disciplines). For graduate students; open to undergraduates.

HCS/Phil

770 Philosophy of Medicine (3)

Schaffner

An introduction to philosophical issues in medicine, including scientific progress, the doctor-patient relationship, whether diseases are objective or socially conditioned entities, clinical reasoning using some simple examples from medical diagnosis and new drug testing, and ethical and social issues raised by the AIDS epidemic. For undergraduates; open to graduate students.

Phil

771 Philosophy of Biology (3)

Schaffner

An introduction to philosophical issues in biology, including evolutionary biology, molecular biology and reductionism, teleology, experimental objectivity, philosophical implications of the neurosciences, sociobiology, and evolutionary ethics. For undergraduates; open to graduate students.

HCS/Phil

775 Ethics and Health Policy (3)

Schaffner

The problem of health care reform and ethical issues associated with managed care and competition, Medicare and Medicaid reform, and the issue of health care rationing. Issues relating to the “right to die,” including active and passive euthanasia and physician-assisted suicide. For graduate students; open to undergraduates.

HCS/Phil

777 The Human Genome Project: Ethical, Legal, and Social Implications (3) Schaffner

Ethical, legal, and social implications of the decoding of the entire human genome, including confidentiality of genetic information, genetic discrimination and insurance, reductionistic/deterministic implications, forensic issues, research ethics, gene therapy and patenting, and cloning. For graduate and medical students; open to undergraduates.

HCS/Phil

780 Neurobiology and Reductionism (3)

Schaffner

Recent developments in neuroscience and theories of consciousness, including neural networks; philosophical implications, including the relations among genetics, brains, and behavior. For graduate students; open to qualified undergraduates.

Rel

770 Islamic Civilization and the West (3)

Nasr

The encounter of Islam and the West, from the rise of Islam to modern times. Investigation of the impact of Islam on European philosophy, science, art, and literature; influence of the West and Western scholarship on the Islamic world. For juniors and seniors; open to graduate students.

Rel

771 Persian Sufi Literature in East and West (3)

Nasr

The writings of major Persian Sufi poets and writers, such as Khayyam, Attar, Rumi, Shabistari, and Hafiz, and their impact on the West and on India. The translation of these works into European languages and their influence upon such figures as Goethe and Emerson are discussed. Assigned readings in English. For undergraduates; open to graduate students.

Rel

772 Mysticism—East and West (3)

Nasr

A thematic examination of mystical traditions: the nature of mysticism, the search for ultimate reality, the mystical significance of the cosmos, the mystical science of the soul, and the significance of sacred art and symbols. Major mystical traditions of East and West—Hinduism, Taoism, Buddhism, Judaism, Christianity, Islam. For undergraduates; open to graduate students.

Rel

773 Perennial Philosophy (3)

Nasr

The idea of perennial philosophy as developed in the 20th century by A. Huxley, A.C. Coomaraswamy, and others. Doctrines and teachings of perennial philosophy as found in various religious and philosophical traditions of East and West. Prerequisite: at least one course in religion, philosophy, or intellectual history. For undergraduates; open to graduate students.

Rel

775 Man and the Natural Environment (3)

Nasr

The religious, philosophical, and scientific causes of the present environmental crisis.

The history of religious and philosophical attitudes toward nature in the West, in the history of Western science, and in some non-Western world views that may encourage a more harmonious relationship between man and the natural environment. For undergraduates; open to graduate students.

Rel

777 Religion and Science (3)

Nasr

The interaction between religion and science in ancient Egypt, classical Greece, Islam, India, China, and the West, from the Renaissance, the scientific revolution, and up to the present day. Key concepts and issues in the encounter of religion and science in light of the cultural matrix of the civilization and period in question. For juniors and seniors; open to graduate students.

Soc

776 Public Policy Research (3)

Etzioni

Basic concepts of policy research in comparison to basic and applied research. Policy research methods. The social structure of policy research: producers and consumers of knowledge and issues arising among them. Open to undergraduates and graduate students with permission of the instructor. Prerequisite: social science or public policy course work or related experience.

PSc/Soc

777 Contemporary American Society (3)

Etzioni

A social science perspective of contemporary American society. Analysis of concepts that allow continued insight into America's condition and future. Institutions examined

include the family, schools, communities, the polity, and relations among racial/ethnic groups. For graduate students; open to undergraduates.

Soc/Econ/PSc

779 The Elements of Socioeconomics (3) Etzioni

A synthesized approach to the study of economic behavior and economic policy, drawing on relevant segments of economics and sociology as well as political science and psychology. A discussion of ethical assumptions and core concepts in the study of micro- and macroeconomic behavior and their policy implications. For graduate students; open to qualified undergraduates.

Soc/PSc/IAff

781 Elements of Communitarian Thinking (3) Etzioni

An examination of the roots of communitarian thinking in earlier philosophical work, current political theory, and historical and contemporary sociology. The relevance of communitarian thinking to various community-building social movements. For graduate students; open to undergraduates with permission of instructor.

Soc/PSc/IAff

782 Elements of Public Policy in Communitarian Perspective (3) Etzioni

The issues that arise when communities seeking to advance their goals run into commitments to individual and minority rights. Freedom of speech and hate codes, public safety and protection against search and seizure, majority votes and minority rights, and other policy issues. For graduate students; open to undergraduates with permission of instructor.

Soc

785 **The U.S. System of Criminal Justice (3)**

Saltzburg

For undergraduates with an interest in law, social justice, and the politics of crime prevention. A rule-oriented view of the adversarial process and key players in the U.S. criminal justice system, including police authority and its limits, the privilege against self-incrimination, and roles of the judge and jury.

University Writing

Professor M. Knight (Executive Director)

Assistant Professors E. Bliss, A. Chernock, E. Drown, S. Friedman, C. Gamber, G. Guerra, C.

Hayes, R. Jerving, R. Kristensen, D. Malone, D. Matlock, M. Mullen, R. Riedner, P. Ryder,

H. Schell, C. Smith, K. Stern, M. Svoboda, D. Thomas, P. Troutman, D. Truncellito, A.

Wilkerson, R. Zeff, C. Zink

The University Writing Program provides comprehensive writing instruction. All undergraduates who enter GW as first-year students take UW 20, followed by two Writing in the Disciplines courses. These courses are designed to enable students to learn conventions of thinking and writing, methods of scholarship, and modes of communication of particular bodies of knowledge. Students are expected to write frequently and intensively, with significant editing and rewriting, sometimes for different audiences and different purposes, and often in collaboration with peers and faculty. Courses indicated with “W” in the *Schedule of Classes* fulfill the Writing in the Disciplines portion of University Writing Program requirements.

20 **University Writing (4)**

University-level, independent research and writing. Learning to frame research questions, identify and analyze supportive and contradictory evidence, employ a variety of research methods, and use the ideas of other writers appropriately. Developing strategies to draft

and revise clear, engaging prose for a variety of purposes and audiences. Thematically oriented seminars; texts and course topics vary among instructors. (Fall and spring)

VIETNAMESE

See **East Asian Languages and Literatures**.

WOMEN'S LEADERSHIP PROGRAMS

Director R.S. Heller

The courses listed below are restricted to students who participate in the Elizabeth J. Somers Women's Leadership Programs on the Mount Vernon Campus.

20 WLP Humanities Seminar (3)

A writing-intensive seminar that emphasizes critical reading skills, concepts of disciplinarity, and processes of producing and legitimating knowledge. Texts and emphasis vary according to cohort.

101–2 Women and Leadership (3–3)

Women's status and leadership roles examined from various perspectives and various fields of endeavor, such as science and technology, the arts, international leadership, and U.S. politics and policy. Prerequisite to WLP 102: WLP 101 or permission of the instructor. Concurrent registration in WLP 110–11 is required.

110–11 Women and Leadership I Symposium (1–1)

A series of special programs that complements WLP 101–2. Concurrent registration in WLP 101–2 is required.

120–21 Women and Leadership II Symposium (0 or 1 each)

A series of special programs and experiential learning. Concurrent registration in WLP 151 is required for WLP 120.

151 Theory and Practice of Women's Leadership (3)

Contemporary theories of leadership; factors affecting women as leaders; building leadership skills through experiential learning. Prerequisite: WLP 102 or permission of instructor. Same as Psyc 151.

WOMEN'S STUDIES

Professors D. Bell, H. Hartmann (*Research*), P.M. Palmer, B. Gault (*Research*)

Associate Professors C.E. Harrison, C. Deitch, D. Moshenberg (*Director*)

Assistant Professors A. Zucker, K. Pemberton

Adjunct Assistant Professors M. Frost, B. Morris

Lecturer N. Turner

Committee on Women's Studies

N. Cahn, E. Chacko, L. Chang, K. Daiya, C. Deitch, C. Gamber, B. Gault, C.E. Harrison, H. Hartmann, L. Jacobson, I. Kennelly, D. Moshenberg, P.M. Palmer, K. Pemberton, G. Weiss, S. Wolchik, A. Zucker

Bachelor of Arts with a major in women's studies—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite course—WStu 1.
3. Required—30 credit hours consisting of WStu 120, 125, 199, plus seven courses from the four groups that follow, with a minimum of one course chosen from each group. A given course can fulfill only one group requirement. With approval of the program advisor, courses with appropriate subject matter may be substituted for those specified.

Women's studies—WStu 170, 183, 195.

Diversity/cross-cultural studies—AmSt/Hist/WStu 185; Anth/WStu 121; Chin/WStu 136; Engl 174; Phil 125; Span 140.

Humanities—AmSt/Hist/WStu 130, 139–40, 185; Chin/WStu 136; Clas 170; Engl 162, 174, 175; Hist 125; Phil 125; Rel/WStu 118, 181; Span 140.

Social science—Anth/WStu 121; Anth 150, 154, 157; Psyc 150; Psyc/WStu 152; Soc 166, 175.

Five-Year Bachelor of Arts with a major in women's studies and Master of Arts in the field of women's studies or in the field of public policy with a concentration in women's studies—

Students interested in either of these dual degree programs should consult the Women's Studies Program office for requirements by the beginning of their junior year.

Special Honors—For Special Honors in women's studies, a major must meet the general requirements stated under University Regulations, attain a grade-point average of at least 3.7 in courses counted for the women's studies major and 3.3 overall, receive a grade of *A* in WStu 199, and submit an honors paper to the Women's Studies Program. Upon faculty review of the honors paper, the student may be recommended for graduation with Special Honors.

Minor in women's studies—18 credit hours, including WStu 120 and 125, plus four elective courses, of which at least three are at the 100 level, as approved by the advisor. Elective courses that are typically approved are listed under the women's studies major, above. Pertinent courses are frequently taught as departmental topics courses and in the 700 Series.

1 **Women in Western Civilization (3)**

Morris and Staff

Exploration of critical periods of intellectual and cultural change in Western societies as influenced by and affecting women. Examination of images of women and of changing

ideal types of femininity and masculinity. Aspects of law, religion, art, culture, work, and politics in relation to these topics. Same as Hist 42. (Fall)

120 Introduction to Women's Studies (3) Gamber and Staff

A multidisciplinary examination of historical conditions, cultural norms, and social institutions that define women's status in Western culture. Experiences of girls and women in various racial-ethnic, class, and age groups. Alternative visions for women's (and, by implication, men's) roles and status. Sophomore standing required. (Fall and spring)

121 The Anthropology of Gender: Cross-Cultural Perspectives (3) Staff

Anthropological representations of gender relations in "other" cultures have provided important case material for feminist theorizing of sex differences and gender roles and statuses. How a cross-cultural approach can inform our understanding of gender. Same as Anth 121. (Spring)

125 Varieties of Feminist Theory (3) Deitch

Classical and contemporary texts on feminist explanations of women's status. Relationships within the sex/gender system and arrangements based on class and race. Evaluation, through the lens of feminist theory, of several academic disciplines in the sciences, social sciences, and humanities. Prerequisite: WStu 1 or 120 or permission of instructor. (Spring)

130 Sexuality in U.S. History (3) Staff

Same as AmSt/Hist 130.

135 A Study of Women and Media (3) Gamber and Staff

The role media plays in women's lives. The limits and effects of a "dominant" media; representations of women in print media and television, especially advertising, and in books and film. How women have attempted to articulate a culture that serves their personal, political, and social interests. (Summer)

136 **Chinese Women in Myth, Literature, and Film (3)** Frost

Same as Chin 136.

139–40 **Women in the United States (3–3)** Murphy, Harrison

Same as Hist/AmSt 139–40.

150 **Women in Judaism (3)** Staff

Same as Rel 118.

152 **Women and Psychology (3)** Zucker

Same as Psyc 152.

170 **Selected Topics (3)** Staff

Examination and analysis of central issues in women's studies, such as women and difference, women in media, women and violence, athletics and gender. Topic changes each semester; may be repeated for credit. (Fall and spring)

181 **Women in Western Religion (3)** Pemberton

Same as Rel 181.

183 **Practicum in Women's Studies (3)** Deitch

Study of the changing status of women through supervised assignment to public and private agencies engaged in policymaking, education, political action, and research.

Usually for seniors. Placement arrangements must be made the semester prior to registration; departmental permission is required. (Spring)

185 **Black Women in U.S. History** (3)

Alexander

Same as AmSt/Hist 185.

195 **Undergraduate Research** (1 to 3)

Staff

A written proposal approved by the member of the faculty who will supervise the research is required prior to registration.

199 **Senior Seminar** (3)

Staff

For students completing a major or minor in women's studies. Writings of contemporary scholars and writers whose work provides critical frameworks for feminist scholarship and research. Individual or collaborative research projects are presented and submitted as written papers. (Fall)

YIDDISH

See **Classical and Semitic Languages and Literatures**.

Faculty

FACULTY AND STAFF OF INSTRUCTION 2005–2006

(as of Fall 2005)

Columbian College of Arts and Sciences

School of Business and Public Management

Graduate School of Education and Human Development

School of Engineering and Applied Science

Elliott School of International Affairs

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As this Bulletin was prepared for press, the Management Science Department was reconfigured into the Decision Sciences, Information Systems and Technology Management, and Management Departments. See www.gwu.edu/~business.

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Law School: Juris Doctor (J.D.), Master of Laws (LL.M.), and Doctor of Juridical Science (S.J.D.)

School of Engineering and Applied Science: Bachelor of Science (B.S.), Bachelor of Arts (B.A.), Master of Engineering Management (M.E.M.), Master of Science (M.S.), Engineer (Engr.), Applied Scientist (App.Sc.), and Doctor of Science (D.Sc.)

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